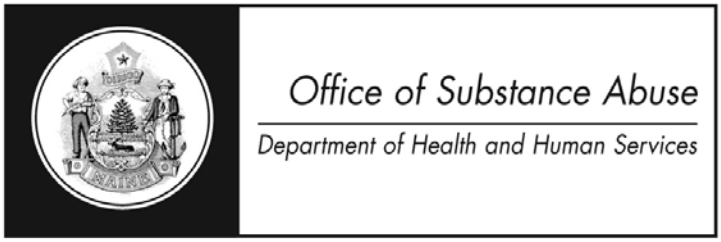
The Cost of Alcohol and Drug Abuse in Maine, 2005

December, 2007



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The Cost of Alcohol and Drug Abuse in Maine: 2005

Executive Summary

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Summary findings

- In 2005, the total estimated cost of substance abuse in Maine was $898.4 million.
- This $898.4 million translates into a cost equaling $682 for every resident of Maine.
- Substance abuse treatment ($25.2 million) comprised the smallest proportion of total cost (2.8%), while costs associated with crime comprised the largest proportion of costs ($214.4 million or 23.9%).

Substance abuse treatment

Treatment services available in Maine to help persons with substance use disorders include various levels of residential programs, outpatient programs, medication assisted treatment, detoxification, and specialty programs for youth, pregnant women, and persons who are diagnosed with both mental health and substance use disorders.

Summary findings:

- The total estimated cost of providing treatment in Maine in 2005, based on reported annual revenue, was $25.2 million.
- Of this amount, 38.4% is from state funds (including federal block grants), 33.5% from Medicaid, 2.7% from client payments, 0.9% from other federal government funds, 15.5% from local or other public funds, 3.8% from private insurance, and 5.3% from other or unknown funding sources.
- Approximately 19,593 admissions for drug and/or alcohol related treatment, representing 15,884 distinct individuals, were reported during 2005.

Morbidity

Alcohol and drug abuse or dependence may adversely affect an individual's work productivity as well as his or her ability to function in other roles. Examples of reduced work productivity would include a worker calling in sick or working while hung-over from heavy drinking the night before, using drugs or alcohol on the job, or leaving work early to use drugs and consume alcohol. An individual's productivity in other non-work roles may also be affected by alcohol or drug use, e.g. performing household or child-care duties. In all these cases, reduced output resulting from alcohol or drug use can be measured as an economic loss. It is often assumed, incorrectly, that the affected worker or individual incurs all of the costs for his or her behavior. Alcohol and drug abuse or dependence creates an economic loss borne by society at large.

Summary findings:

- Total morbidity costs in 2005 due to alcohol or drug abuse were estimated to be $155.6 million.
- Males accounted for 60.8% of total costs.
- Males aged 45-64 accounted for the largest portion of alcohol morbidity costs.

Mortality

A major economic loss is imposed on society by premature death from substance use and abuse. Premature death through illness or injury can occur though auto and other accidents involving alcohol, through liver diseases such as hepatitis and cirrhosis, through increasing the risk of cancer or cerebrovascular disease, and through violence involving drugs or alcohol. When an individual dies prematurely, there is an economic cost to society in the form of the loss of that individual's productive capacity.

Summary findings:

- 681 deaths related to drug and alcohol abuse occurred in 2005, (544 alcohol-related and 137 drug-related deaths), resulting in 15,747 years of potential life lost.
- Major causes of death were:
    a. cancer (various types) – 136 deaths
    b. cirrhosis, cerebrovascular disease and suicide - 48 deaths each
    c. motor vehicle accidents – 42 deaths
- Total mortality costs for 2005 were $204.2 million. Of this amount, $132.6 million resulted from alcohol abuse and $71.6 million from drug abuse.
- The average cost per death in 2005, measured in lost earnings, was $299,827.

Crime

Recent surveys of incarcerated populations provide evidence of the strong link between crime and substance abuse. In 2004, one in four federal inmates (26%) and one in three state inmates (32%) reported that they were under the influence of alcohol or illicit drugs at the time of their current offense. Fifty-three percent (53%) of State and 45% of Federal prisoners met the diagnostic criteria for drug dependence or abuse (US Department of Justice, 2006).

Summary findings:

- Of 14 arrests for homicide, an estimated 4 were related to alcohol and 2 to drug abuse.
- In 2005, 7,520 arrests were related to assaults (aggravated, sexual and other), of which an estimated 2,247 were related to alcohol abuse and 369 to drug abuse.
- Total estimated drug- and alcohol-related crime costs in 2005 were $214.4 million.
- Of the four major crime cost categories analyzed, law enforcement costs were highest ($101.1 million), followed by the cost of corrections ($44.0 million).

Medical care

Alcohol and drug abuse increases the risk of illness or injury and thereby increases the use of health care services. The effects of substance abuse on health care utilization may be obvious and immediate or more indirect and long term. The link between substance use and health care costs is clear in the case of an individual overdosing on drugs and then requiring hospitalization, or a person driving under the influence of alcohol who sustains serious injury in an auto accident and requires emergency hospital treatment. But prolonged alcohol abuse can also increase the risk for a number of diseases, including stomach cancer, cancer of the esophagus, respiratory tuberculosis, liver damage and pancreatitis, thereby increasing the demand for costly medical care as well as premature nursing home care.

Summary findings:

- There were approximately 8,349 hospital discharges in Maine in 2005 directly or indirectly related to drug and alcohol use or abuse.
- The total cost of providing hospital inpatient care for these patients, including adjustment for longer stays due to co-occurring substance dependency, was estimated at $111.2 million, including $87.0 million, or 78.2% related to alcohol use.
- The estimated cost of outpatient medical care was $51.3 million.

- Prescription drug costs and nursing home costs attributable to alcohol were, respectively, $18.2 million and $6.2 million.
- The total estimated medical cost was $186.8 million.

Other related costs

Substance use and abuse impacts a number of areas not included in the previous sections: Child welfare and the administration of other social welfare programs, fire protection and the destruction caused by fire, and the non-medical costs of motor vehicle accidents.

Summary findings:

- An estimated $52.3 million in child welfare costs related to substance abuse was spent in Maine during 2005.
- An estimated $2.3 million was spent on the administration of other social welfare programs related to drug and alcohol abuse in Maine during 2005.
- Alcohol is believed to play a role in a large proportion of fires. In 2005, the estimated cost of these fires in Maine was $9.2 million.
- The cost of alcohol-related motor vehicle crashes in Maine in 2005 is estimated at $48.4 million.
- The combined cost of all three cost categories was $112.2 million

Chapter 1
Introduction

Introduction and Background

The purpose of this report is to attempt to quantify, in monetary terms, the consequences of alcohol and drug abuse for the State of Maine. The problem of alcohol and drug abuse continues to be a major social concern, with serious personal, social and economic consequences. Alcohol and drug abuse cause illness, disability and premature death. The burden on society encompasses the use of costly health care resources, significant productivity (economic) losses due to morbidity, serious injuries from motor vehicle accidents, and criminal activity resulting in property damage and incarceration. An earlier report sponsored by the Office of Substance Abuse, using year 2000 data, estimated the cost of substance abuse as $485 per Maine citizen. The current report provides an update to that report, using 2005 data.

Methodology

Prevalence-based cost estimation studies measure the value of resources used or lost during a specified period of time, regardless of the time of disease onset. For the current study, the base period is calendar year 2005. The population of interest resides in the State of Maine, estimated as 1,318,220 persons in 2005 (US Bureau of the Census, 2007).

Cost-of-illness studies, like this one, require the valuation of human life. Two approaches can be used to value life, the human capital and the willingness-to-pay approach. This study uses the human capital approach, which measures an individual's value to society in terms of his or her production potential, reflected in earnings. From this perspective, the value of an individual to society is his or her earnings and the value of a life lost due to premature death becomes the discounted stream of future earnings of that individual.

Studies employing the human capital approach measure the direct and indirect costs of specific disease categories. Direct costs are those for which payments are made (e.g., medical care or alcohol treatment); indirect costs are those for which resources are lost (e.g., lost productivity due to morbidity or mortality). The estimation of direct costs is straightforward, but indirect costs are more difficult to analyze because they require valuation of a person's

production potential. The human capital approach is based on the restrictive assumption that a person's earnings reflect his or her value. Obviously, this undervalues certain members of society: children, elderly, persons with disabilities, ethnic minorities and women. Despite its limitations, the human capital approach remains widely used and provides a useful method for analyzing the cost of disease.

Limitations

This analysis has several limitations that merit mention. First, any cost estimation study may suffer from the omission of certain costs. A useful caveat to remember is that this report provides a conservative estimate of the costs of substance abuse to Maine, but by no means captures all of the associated economic costs.

Second, to estimate costs related to drug and alcohol abuse, the analyses that follow often had to allocate a portion of total costs to substance abuse. Prior studies have developed attributable fractions that can be used to estimate the portion of total costs that can reasonably be attributed to alcohol or drug use (NIDA/NIAAA, 1998). If only 30% of all medical costs incurred in treating stomach cancer are clinically attributed to alcohol abuse, then only 30% of medical costs incurred in treating stomach cancer should be attributable to alcohol abuse, for example. The attributable fractions used here are the same as those used for a national cost analysis (NIDA/NIAAA, 1998). While these are based on the best available information, many of the attributable fractions were developed from research conducted as much as 25 years ago.

Third, though an effort was made to replicate the study completed on year 2000 data, slight differences in data sources and methodology arose. Differences are noted where applicable. Comparisons between this report and the previous report should therefore be made with caution.

In addition, although efforts were made to obtain Maine data for the year 2005, this was not always possible. In certain cases, national data were used to provide estimates for Maine and older cost data were adjusted for inflation to provide estimates for 2005.

Organization

The report is organized into eight chapters. Chapters two through seven present cost estimates for each of the six cost areas analyzed: substance abuse treatment, morbidity, mortality, crime, medical care, and other related costs. The final chapter summarizes the findings of the analyses and outlines some policy implications.

Chapter 2

Substance Abuse Treatment

Treatment services available in Maine to help persons with substance use disorders include various levels of residential programs, outpatient programs, medication assisted therapy, detoxification, and specialty programs for youth, pregnant women, and persons who have co-occurring mental health and substance use disorders.

This chapter documents treatment costs in Maine for 2005 and also presents information concerning service utilization. Complete and detailed information regarding treatment costs is difficult to obtain because of the multiplicity of funding sources and the large number of programs. The best source of current information on treatment cost is the Treatment Data System (TDS) maintained by the Maine Office of Substance. The service utilization data presented in this chapter are from the TDS.

The major findings of the analysis were:

- The total estimated cost of providing treatment in Maine in 2005, based on reported annual revenue, was $25.2 million.
- Of this amount, 38.4% is from state funds (including federal block grants), 33.5% from Medicaid, 15.5% from local or other public funds, 5.3% from other funding sources, 3.8% from private insurance, 2.7% from client payments, and 0.9% from other federal government funds.
- Approximately 19,593 admissions to drug and/or alcohol related treatment services, representing 15,884 distinct individuals, were reported during 2005.

Methodology

Cost estimates in this chapter were based on OSA contract reports, and treatment service information was obtained from TDS (Treatment Data System, 2007). The data in the TDS system are collected from approximately 90% of the treatment facilities located throughout the State. The proportion of clients whose data are included in TDS is even higher than 90% because the facilities that are not required to report tend to be small. The facilities that are required to report to TDS are those that are: 1) funded by OSA, 2) reimbursed by Medicaid for substance abuse treatment, or 3) licensed to dispense methadone.

Results

Major sources of treatment funding are shown in Table 2.1. Treatment costs totaled approximately $25.2 million. The single largest payer source was state and federal government funds (not including Medicare or Medicaid), which accounted for 39.3% of all treatment funding. The second most important source was Medicaid (33.5%), followed by local or other public funds (15.5%).

Table 2.1
Treatment Funding by Payer
Maine, 2005

Funding source	Funding ($)	Percent of total funding (%)	Attributable to alcohol[1] (47%)	Attributable to drugs (18%)	Attributable to both alcohol and drugs (34%)
Public funding					
State General Fund	3,568,892	14.2	1,677,379	642,401	1,213,423
Driver Education and Evaluation Program	1,244,684	4.9	585,001	224,043	423,193
Medicaid Seed					
State share[2]	3,364,823	13.4	1,581,467	605,668	1,144,040
Federal share	5,071,456	20.1	2,383,584	912,862	1,724,295
Substance Abuse Prevention and Treatment Block Grant	4,851,229	19.3	2,280,078	873,221	1,649,418
Other federal government funds	230,533	0.9	108,351	41,496	78,381
Local government funds	486,465	1.9	228,639	87,564	165,398
Other public funds	3,423,120	13.6	1,608,866	616,161	1,163,861
Total public funding	22,241,202		10,453,365	4,003,416	7,562,009
Private funding					
Client payments	670,147	2.7	314,696	120,626	227,850
Private health insurance	944,565	3.8	443,946	170,022	321,152
Other/unknown funds	1,321,248	5.3	620,987	237,825	449,224
Total private funding	2,935,960		1,379,901	528,473	998,226
TOTAL	25,177,162		11,833,266	4,531,889	8,560,235

[1] Based on percentage of admissions reporting alcohol as primary substance of abuse
[2] Paid by DHHS

Data gathered through TDS includes information about treatment services, utilization and program capacity. Data can be broken down by type of disorder and type of service setting. Admissions include persons who reported a primary problem of substance use as well as affected others such as family members. Of all admissions for treatment in 2005, 66.0% were for outpatient services (Table 2.2); 18.6% of admissions were for drug problems only, 47.2% were for alcohol problems only, and the remaining 34.3% of admissions were for treatment of combined alcohol and drug problems.

Table 2.2
Number of admissions for treatment by type of disorder
Maine, 2005

Type of disorder	Treatment type		Total	Percent (%)
	Inpatient	Outpatient		
Alcohol disorder	4,516	4,728	9,244	47.2
Drug disorder	602	3,037	3,639	18.6
Dual disorder	1,538	5,172	6,710	34.3
Total	6,656	12,937	19,593	100.00
Percent	34.0	66.0		

Persons may be admitted to treatment multiple times over the course of a year, either as new admissions to different facilities for different levels of care or as re-admissions to the same facilities or levels of care. Table 2.3 shows how these 19,593 admissions represented 15,884 individual clients. Most (76.9%) clients were admitted to outpatient services.

Table 2.3
Number of clients receiving treatment by type of disorder
Maine, 2005

Type of disorder	Treatment type		Total	Percent (%)
	Inpatient	Outpatient		
Alcohol disorder	1,855	4,548	6,403	40.3
Drug disorder	590	3,480	3,480	21.9
Dual disorder	1,225	4,776	6,001	37.8
Total	3,670	12,214	15,884	100.00
Percent	23.1	76.9		

As shown in Table 2.4, 93.8% of all admissions to treatment were white clients, 2.6% were black clients, 2.4% were American Indian/Alaskan Native clients, and the remaining small portion included Asians and clients of other races. The demographic profile of the state population overall is shown in the last column of Table 2.4. In general, the treatment population reflects the state population, although blacks and Native Americans are somewhat over-represented in the treatment population and whites and Asians are under-represented.

Table 2.4
Admissions for treatment by race
Maine, 2005

Race	Inpatient	Outpatient	Treatment population (%)	State population (%)
White	6,220	12,157	18,377 (93.8)	1,276,099 (96.8)
Black	239	264	503 (2.6)	10,338 (0.8)
American Indian/Alaskan Native	104	362	466 (2.4)	7,540 (0.6)
Asian	12	32	44 (0.2)	11,330 (0.9)
Other	81	122	203 (1.0)	12,466 (0.9)
Total	6,656	12,937	19,593	1,318,220

Approximately 7% of admissions were clients under age 18, 19.5% were for clients age 18-24, 24.5% were for clients age 25-34, 24.8% were for clients age 35-44 and 23.9% were age 45 or older (Table 2.5). Outpatient services comprised 66.0% of all admissions.

Table 2.5
Admissions for treatment by age
Maine, 2005

Age group	Inpatient	Outpatient	Treatment (%)	Population (%)
Under 18	54	1,377	1,431 (7.3)	285,170 (21.6)
18-24	761	3,060	3,821 (19.5)	117,048 (8.9)
25-34	1,499	3,306	4,805 (24.5)	151,290 (11.5)
35-44	2,062	2,789	4,851 (24.8)	198,906 (15.1)
45-54	1,825	1,743	3,568 (18.2)	214,969 (16.3)
55-64	390	511	901 (4.6)	159,967 (12.1)
65+	65	151	216 (1.1)	190,870 (14.9)
Total	6,656	12,937	19,593 (100.0)	1,318,220 (100.0)

Summary and Implications

Treatment costs in Maine in 2005 were estimated at $25.2 million, representing a per capita expenditure of approximately $19.10, assuming a population of 1,318,220 persons in 2005. The largest funding source was government funding.

Despite the large amount spent for treatment, this expenditure represents only a fraction of the estimated need. According to estimates from the National Survey of Drug Use and Health (NSDUH) approximately 9.3% (+/- 0.7%) of the Maine population aged 18 or over was in need of treatment services (SAMHSA, 2007). Based on an estimated 1,033,050 adult residents living in Maine during 2005, approximately 96,074 adults (+/- 7,232) were in need of treatment. Only 15,884 adults were reported to have received treatment, however.

The amount of resources devoted to treatment represents a modest investment (less than 3%) in relation to the total cost of substance abuse in Maine ($898.4 million). The degree of unmet need for treatment when viewed in light of the economic cost of substance abuse raises compelling questions about the adequacy of Maine's investment in treatment services.

Chapter 3

Morbidity

Alcohol and drug use or dependence may adversely affect the ability of an individual to participate in work or other activities. This chapter measures morbidity costs as reduced productivity from alcohol and drug abuse, measured in terms of either wage earnings for workers or housekeeping values for non-workers.

The major findings of the analysis were:

- Total morbidity costs in 2005 due to alcohol or drug abuse were $155.6 million.
- Males accounted for 60.8% of total costs.
- Males aged 45-64 accounted for the largest portion of alcohol morbidity costs.

Methodology

This chapter generally follows the methodology used in previous studies that attempted to estimate morbidity costs associated with alcohol or drug use (Baird et al., 2004; Wickizer, 1999; Rice et al., 1990).

First, the numbers of persons with a drug abuse disorder, the number with an alcohol abuse disorder, and the total number with either or both disorders were estimated based upon prevalence data gathered through the NSDUH[3]. Due to small sample sizes, data from multiple years (2002-2005) had to be combined to develop reasonably reliable prevalence estimates by age and gender (SAMHSA, 2007). SAMHSA provided estimates of alcohol use disorders, illicit drug use disorders, and totals by age group and gender for the State of Maine.

The prevalence rates were applied to Maine Census population estimates for the year 2005 (US Census Bureau, 2006) to estimate the numbers of persons within each age group and gender category who met the criteria for a substance disorder.

The number of persons falling within each category was multiplied by the labor force participation rate within each group to attempt to estimate the number of employed persons who might have a substance use disorder.

[3] Total persons with a substance abuse disorder is less than the sum of persons with an alcohol or drug abuse disorder because some persons have both disorders.

Substance abuse can result in economic loss for those who are not employed by reducing the ability to perform other activities, such as maintaining a household. Therefore, the numbers of persons with a substance use disorder who were not employed were estimated by subtracting the number of employed persons from the total number of persons with the disorder.

The average earnings estimates for male and female age groups were derived from Maine-specific data from the 2005 Current Population Survey.

The alcohol and drug use disorder impairment rates were determined by averaging the rates used by Wickizer (1999). To develop an estimate of an impairment rate to apply to the alcohol or drug use disorder estimates, the impairment rates for the two separate categories were weighted according to the percentage of age specific prevalence reported from the NSDUH. [4]

Median earnings for each age/gender/labor participation group were multiplied by the relevant impairment rate to generate estimates of lost earnings due to drug and alcohol abuse.[4]

Results

Approximately 78,343 adults in Maine had an alcohol use disorder in 2005; 32,610 adults had a drug use disorder, and 93,314 adults had either or both disorders (Table 3.1).

The prevalence of abuse or dependence was highest among the 18-24 year old age group. The prevalence of alcohol abuse or dependence was 21.7% for males and 12.4% for females in the 18-24 year old age group. An estimated 14.5% of males and 8.2% of females in that age group met the criteria for drug abuse or dependence. Criteria for illicit drug or alcohol abuse or dependence were met by 28.7% of males and 17.7% of females in the 18-24 year old age group.

Based upon the labor force participation rates included in Table 3.2, an estimated 49,356 employed persons had an alcohol use disorder, at least 20,544 employed persons had a drug use disorder, and an estimated 58,789 employed persons had either or both disorders in Maine in 2005. Of persons who were not participating in the labor force, an estimated 28,987 persons were estimated to have an alcohol use disorder, 12,066 persons had a drug use disorder, and 34,525 persons had either or both disorders.

[4] See Appendix A for details of the calculations.

Table 3.1
Estimated number of adults with abuse or dependence, by gender, age
Maine, 2002-2005

	Alcohol disorder prevalence	Drug disorder prevalence	Alcohol and/or drug disorder prevalence	2005 Maine Population	Alcohol disorder	Drug disorder	Alcohol and/or drug disorder
	% (s.e.)	% (s.e.)	% (s.e.)	N	N	N	N
Male							
18-24	21.7 (2.0)	14.5 (1.8)	28.7 (2.2)	60,236	13,071	8,734	17,288
25-44	11.0 (1.7)	4.6 (1.2)	13.9 (1.9)	172,004	18,920	7,912	23,909
45-64	8.7 (2.5)	*	8.7 (2.5)	184,629	16,063	*	16,063
65+	*	*	*	80,937	*	*	*
Total	10.3 (1.1)	3.9 (.8)	12.1 (1.3)	497,806	51,274	19,414	60,235
Female							
18-24	12.4 (1.8)	8.2 (1.2)	17.7 (2.0)	56,812	7,045	4,659	10,056
25-44	6.5 (1.2)	2.4 (.8)	7.6 (1.3)	178,192	11,582	4,277	13,543
45-64	2.8 (1.4)	*	3.2 (1.4)	190,307	5,329	*	6,090
65+	*	*	*	109,933	*	*	*
Total	4.8 (.7)	2.4 (.6)	5.9 (.8)	535,244	25,692	12,846	31,579
TOTAL	17.1 (1.3)	11.4 (1.0)	23.3 (1.4)	1,033,050	78,343	32,610	93,314

Sources: SAMHSA, 2007; US Census, 2006

Table 3.2
Estimated number of adults with abuse or dependence, by gender, age, and employment status
Maine, 2002-2005

	Alcohol disorder	Drug disorder	Alcohol and/or drug disorder	Labor force participation rate	Employed			Not employed		
	N	N	N	%	Alcohol disorder	Drug disorder	Alcohol and/or drug disorder	Alcohol disorder	Drug disorder	Alcohol and/or drug disorder
Male										
18-24	13,071	8,734	17,288	67.8	8,858	5,919	11,716	4,213	2,815	5,572
25-44	18,920	7,912	23,909	86.5	16,360	5,362	20,674	2,560	2,550	3,235
45-64	16,063	*	16,063	75.1	12,070	*	12,070	3,993	*	3,993
65+	*	*	*	17.7	*	*	*	*	*	*
Female										
18-24	7,045	4,659	10,056	61.3	4,321	3,157	6,168	2,724	1,502	3,888
25-44	11,582	4,277	13,543	76.0	8,800	2,899	10,290	2,782	1,378	3,253
45-64	5,329	*	6,090	70.3	3,748	*	4,283	1,581	*	1,807
65+	*	*	*	10.4	*	*	*	*	*	*

Sources: SAMHSA, 2007; US Department of Labor, 2007

Median annual wages in Maine in 2005 ranged from a low of $14,534 for males aged 65 and older to $41,600 for males aged 45-64 (Table 3.3).

Housekeeping values, which represent imputed market values for maintaining the home, are included in Table 3.3. Employment earnings do not capture all of the productive capacity of individuals, because people have to maintain households apart from their jobs. Thus, Table 3.3 includes two sets of housekeeping values, one for persons in the labor force, the second for persons not in the labor force. Housekeeping values are significantly higher for females than males, reflecting the relative amount of time spent in this activity. These housekeeping values were calculated by taking the values from the 2000 Cost Report and adjusting for inflation (16.59% from 2000 to 2005, InflationData.com).

Table 3.3

Morbidity costs

Maine, 2005

	Employed			Not in labor force			Median earnings	Housekeeping		Impairment rates			Morbidity costs		
	Alcohol disorder	Drug disorder	Alcohol and/or drug disorder	Alcohol disorder	Drug disorder	Alcohol and/or drug disorder		In labor force	Not in labor force	Alcohol	Drugs	Alcohol and/or drugs	Alcohol	Drugs	Alcohol and/ or drugs
	N	N	N	N	N	N	$	$	$				$	$	$
Male															
18-24	8,858	5,919	11,716	4,213	2,815	5,572	23,400	3,502	7,257	1.40	1.10	1.61	3,764,263	1,976,282	5,725,504
25-44	16,360	5,362	20,674	2,560	2,550	3,235	36,400	4,405	8,227	4.25	5.45	5.17	29,266,986	13,067,685	44,990,404
45-64	12,070	*	12,070	3,993	*	3,993	41,600	4,770	8,602	7.40	7.80	7.40	43,957,761	*	43,957,761
65+	*	*	*	*	*	*	14,534	3,558	6,762	9.30	7.30	*	*	*	*
													76,989,010	15,043,967	94,673,669
Female															
18-24	4,321	3,157	6,168	2,724	1,502	3,888	17,807	11,076	18,337	0.80	0.20	0.65	1,398,061	237,460	1,621,414
25-44	8,800	2,899	10,290	2,782	1,378	3,253	24,000	13,128	20,347	7.35	1.45	6.74	28,174,888	1,967,131	30,2117,068
45-64	3,748	*	4,283	1,581	*	1,807	31,200	11,588	18,891	15.30	4.55	*	29,105,705	*	29,109,774
65+	*	*	*	*	*	*	14,560	5,501	9,017	18.70	7.30	*	*		*
													58,678,654	2,204,591	60,942,256
EST													135,667,664	17,248,559	155,615,925

Sources: US Census Bureau, 2007; Baird, Lanctot and Clough, 2004; Rice et al., 1990

Table 3.3 includes impairment rates for different age-gender groups for alcohol and drugs.[5] These impairment rates provide an estimate of reduced productivity, measured by earnings, associated with drug and alcohol use disorder. For example, the alcohol impairment rate of 7.4% for males aged 45-64 indicates that males in this age group would, on average, earn 7.4% less than males of a similar age who did not have an alcohol disorder.

Total morbidity costs for alcohol in 2005 were estimated at $135.7 million. Males accounted for 56.7 percent ($77.0 million) of these costs. Total morbidity costs for drugs were 17.2 million, with 87.2 percent ($15.0 million) of this cost attributable to males. Total morbidity cost for alcohol and/or drug use was $155.6 million in 2005.

Summary

Alcohol and drug abuse result in substantial economic loss to Maine by reducing productivity. Total morbidity costs for 2005 for alcohol or drug use were estimated at $155.6 million.

Total costs estimated for the year 2000 were based on a slightly different methodology, estimating costs for separate categories of alcohol and drug abuse but not for alcohol and/or drug abuse. Costs associated with alcohol abuse were higher in 2005, estimated at $135.7 million, compared to a cost of $69.8 million in 2000. Costs associated with drug abuse were higher in 2000 ($27.6 million) than drug abuse morbidity costs in 2005 ($17.3 million).

[5] The impairment rates for alcohol and drug use were adapted from Rice et al., 1990 (Table 40).

Chapter 4
Mortality

Premature death due to drug and alcohol use and abuse imposes a major economic loss on society. Premature death through illness or injury can occur through auto accidents involving alcohol, through increasing the risk of cancer or cerebrovascular disease, or through violence involving drugs or alcohol. When an individual dies prematurely, there is an economic cost to society in the form of loss of that individual's productive capacity.

This chapter analyzes mortality costs for Maine in 2005. It has three aims:

1. To determine the number of alcohol- and drug-related deaths.
2. To estimate the number of years of potential life lost from these deaths.
3. To estimate the total economic costs of drug- and alcohol-related deaths.

The major findings of the analysis were:

- 681 deaths related to drug and alcohol abuse occurred in 2005, (544 alcohol-related and 137 drug-related deaths), resulting in 15,747 years of potential life lost.
- Major causes of death were:
    a. cancer (various types) – 136 deaths
    b. cirrhosis, cerebrovascular disease and suicide - 48 deaths each
    c. motor vehicle accidents – 42 deaths
- Total mortality costs for 2005 were $204.2 million. Of this amount, $132.6 million resulted from alcohol abuse and $71.6 million from drug abuse.
- The average cost per death in 2005, measured in lost earnings, was $299,827.
- Drugs accounted for a lower proportion of deaths than of costs. Only 20.1% of deaths were attributable to drugs, yet 35.0% of costs were attributable to drugs, suggesting that deaths due to drug use occurred for a younger population and resulted in a higher number of years of life lost per person than deaths resulting from alcohol use.

Methodology

In brief, three steps were followed. First, the number of deaths due to diseases associated either directly or indirectly with alcohol or drug use was obtained from the death certificate file

of the Maine Office of Data, Research and Vital Statistics (ODRVS), Department of Health and Human Services (DHHS, 2007). Alcohol Attributable Fractions (AAF) and Drug Attributable Fractions (DAF) used by NIDA/NIAAA were applied to the data to estimate the number of alcohol- and drug-related deaths in Maine.

Second, the number of years of potential life lost was calculated for each age group and gender using the year 2005 life expectancy tables for Maine obtained from ODRVS.

Third, the mortality cost for each age-gender cohort was determined by using the same cost per year of potential life lost as used by Wickizer (1999). Cost figures were adjusted for inflation of 23.51% from 1996 to 2005 (InflationData.com, 2007) and for the 2005 Maine-Washington wage ratio for males (.8239) and females (.8297), according to data from the 2005 American Community Survey (US Census Bureau, 2007b). The final adjusted mortality cost figure was then multiplied by the number of substance-related deaths in Maine.

Results

There were 681 deaths in Maine in 2005 caused by or related to drug or alcohol use. A breakdown of the deaths by age and gender is shown in Table 4.1. Alcohol accounted for 79.9% of the substance abuse deaths, and persons 65 and over represented the greatest proportion of alcohol related deaths (48.0%). In contrast, the proportion of drug-related deaths were higher for younger persons, with each age group between age 25 and age 54 accounting for more than 20 percent of drug-related deaths.

Table 4.1
Number of alcohol and drug-related deaths by age and gender, Maine, 2005

	Alcohol related deaths			Drug related deaths			Total
	Female	Male	Total	Female	Male	Total	
Age	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
1-18	2 (1.2)	8 (2.2)	10 (1.8)	0 (0.0)	1 (1.2)	1 (0.7)	11 (1.6)
19-24	4 (2.3)	9 (2.4)	13 (2.4)	5 (9.3)	10 (12.0)	15 (10.9)	28 (4.1)
25-34	3 (1.7)	15 (4.0)	18 (3.3)	8 (14.8)	25 (30.1)	33 (24.1)	51 (7.5)
35-44	9 (5.2)	26 (7.0)	35 (6.4)	13 (24.1)	22 (26.5)	35 (25.5)	70 (10.3)
45-54	21 (12.1)	74 (19.9)	95 (17.5)	19 (35.2)	11 (13.3)	30 (21.9)	125 (18.4)
55-64	28 (16.2)	84 (22.6)	112 (20.6)	6 (11.1)	10 (12.0)	16 (11.7)	128 (18.8)
65+	106 (61.3)	155 (41.8)	261 (48.0)	2 (3.7)	3 (3.6)	5 (3.6)	266 (39.1)
Total	173 (100.0)	371 (100.0)	544 (100.0) (79.9)	54 (100.0)	83 (100.0)	137 (100.0) (20.1)	681 (100.0) (100.0)

Source: Maine Department of Health and Human Services, Office of Data, Research and Vital Statistics, 2007

More detailed information concerning alcohol-and drug-related deaths is presented in Tables 4.2 and 4.3, which show how the mortality estimates were derived. Table 4.2 includes respective alcohol-attributable fractions (AAF), representing the percentage of deaths within a given diagnosis believed to be attributable to alcohol. For example, the AAF for cancer of the larynx is 0.50, indicating that research has suggested that 50 percent of deaths linked to this form of cancer could reasonably be associated with alcohol use. Table 4.3 has a column labeled drug-attributable fraction (DAF), which provides corresponding information for drug-related deaths. Multiplying the total number of deaths within a diagnostic category by the AAF or DAF gives an estimate of the number of deaths attributable to alcohol or drug use. The AAF and DAF values used for this report are the same as those used in by NIDA/NIAAA (1998).

Table 4.2 shows that cancers accounted for the greatest number of alcohol-related deaths (136), followed by cirrhosis, cerebrovascular disease and suicide (48 each). Motor vehicle

accidents accounted for 42 alcohol-related deaths. For drugs (Table 4.3), accidental poisonings were the leading cause of death (102 deaths).

Table 4.4 provides detailed information on the number of years of potential life lost (YPLL) due to drug and alcohol use and the estimated economic cost of premature death. In 2005, deaths associated with drug and alcohol use resulted in 15,747 years of potential life lost. In 2005, alcohol accounted for a greater proportion (67.0%) of total years of life lost than drugs. The category representing the single greatest number of years of lost life was males age 45-54 dying of alcohol-related causes (2,235 or 14.2%).

Multiplying these years of life lost by lost earnings can provide an estimate of the economic impact of substance abuse. Cost figures were derived from Wickizer (1999) and Rice et al. (1990). The Maine/Washington wage ratio was calculated from the 2005 American Community Survey (US Census Bureau), comparing median wages for full-time year round workers, in 2005 inflation adjusted dollars.

Premature death due to alcohol and drug use resulted in an estimated economic loss of approximately $204.2 million. The estimated economic loss due to premature death in 2005 related to alcohol use was $132.6 million, as compared to $71.6 million for drug use. Alcohol-related deaths among males aged 45-54 accounted for the largest single age group costs, $37.8 million.

Summary

In 2005, 681 people died in Maine from drug and alcohol-related causes, resulting in 15,747 years of potential life lost. Translated into economic terms, this loss of life represented an economic cost of approximately $204.2 million. Approximately 65% of this cost represented premature death related to alcohol use and abuse.

Table 4.2
Deaths attributable to alcohol by diagnosis and gender
Maine, 2005

Diagnosis	ICD-10-CM diagnostic codes	Alcohol attributable fraction	Age (Years)	Total deaths	Male Deaths	Male Alcohol Related Deaths	Female Deaths	Female Alcohol Related Deaths	Total Alcohol Related Deaths
Direct Causes									
Excessive blood levels of alcohol	F10.0	1	≥15	2	1	**1**	1	**1**	**2**
Alcohol abuse	F10.1	1	≥15	17	13	**13**	4	**4**	**17**
Alcohol dependence syndrome	F10.2	1	≥15	40	33	**33**	7	**7**	**40**
Other mental and behavioral problems due to alcohol	F10.3-.9	1	≥15	2	2	**2**	0	**0**	**2**
Alcoholic cardiomyopathy	I42.6	1	≥15	4	3	**3**	1	**1**	**4**
Alcoholic fatty liver	K70.0	1	≥15	1	0	**0**	1	**1**	**1**
Acute alcoholic hepatitis	K70.1	1	≥15	5	4	**4**	1	**1**	**5**
Alcoholic cirrhosis	K70.3	1	≥15	48	37	**37**	11	**11**	**48**
Alcoholic hepatic failure	K70.4	1	≥15	8	6	**6**	2	**2**	**8**
Alcoholic liver damage	K70.9	1	≥15	3	2	**2**	1	**1**	**3**
Indirect Causes									
Respiratory tuberculosis	A15,A16	0.25	≥35	2	1	**0**	1	**0**	**0**
Malignant neoplasm of the oral cavity[6]	C00-C14	0.50	≥35	38	30	**15**	8	**4**	**19**
Malignant neoplasm of the esophagus	C15	0.75	≥35	118	93	**70**	25	**19**	**89**
Malignant neoplasm of the stomach	C16	0.20	≥35	39	25	**5**	14	**3**	**8**
Malignant neoplasm of the liver	C22	0.15	≥35	71	43	**6**	28	**4**	**10**
Malignant neoplasm of the larynx[7]	C32	0.50	≥35	20	14	**7**	6	**3**	**10**
Diabetes mellitus	E10-E14	0.05	≥35	382	190	**10**	192	**10**	**20**
Cerebrovascular disease	G45, I60-I69	0.07	≥35	695	263	**18**	432	**30**	**48**
Essential hypertension	I10	0.08	≥35	41	16	**1**	25	**2**	**3**
Pneumonia and influenza	J10-J18	0.05	≥35	349	146	**7**	203	**10**	**17**
Diseases of the stomach	K20-K31	0.10	≥35	44	22	**2**	22	**2**	**4**

[6] The AAF for females is 0.40.

esophagus, duodenum	(excl. K29.2)								
Cirrhosis of liver, w/o mention of alcohol	K74.3-K74.6	0.50	≥35	52	30	**15**	22	**11**	**26**
Portal hypertension	K76.6	0.50	≥35	1	1	**1**	0	**0**	**1**
Acute pancreatitis	K85	0.42	≥35	12	7	**3**	5	**2**	**5**
Unintentional Injuries									
Accidental drowning & submersions	W65-W74	0.38	≥0	19	17	**6**	2	**1**	**7**
Accidental falls	W00-W19	0.35	≥15	88	52	**18**	36	**13**	**31**
Accidents caused by fire & flames	X00-X09	0.45	≥0	14	9	**4**	5	**2**	**6**
Air and space transport accidents	V95-V97	0.16	≥0	4	2	**0**	2	**0**	**0**
Other injuries and adverse effects	[7]	0.25	≥15	30	18	**5**	12	**3**	**8**
Motor vehicle accidents	[8]	0.42	≥0	190	136	**30**	54	**12**	**42**
Pedal cycle & other road vehicle accidents	[9][6]	0.20	≥0	31	19	**1**	12	**2**	**3**
Water transport accidents	V90-V94	0.20	≥0	6	6	**1**	0	**0**	**1**
Intentional Injuries									
Suicide	X60-X84.9,Y87.0	0.28	≥15	173	144	**40**	29	**8**	**48**
Homicide	X85-Y09,Y87.1	0.46	≥15	20	11	**5**	9	**4**	**9**
Total				2,569	1,396	**371**	1,173	**173**	**544**

Sources: Maine Department of Health and Human Services, Office of Data, Research and Vital Statistics, 2007; International Classification of Diseases, 10th revision, Clinical Modification (ICD-10-CM); Wickizer, 1999; NIDA/NIAAA, 1998

[7] X31, W78, W79, W50, W51, W22-W24, W27-W34, Y10, Y13, Y14, Y18, Y19

[8] V02-V04, V09 (.0, .2), V12-V14 (.3-.9), V19 (.0-.2, .4-.6), V20-V79, V80 (.3-.5), V81 (.0, .1), V82 (.0, .1), V83-V86, V87 (.0-.8), V88 (.0-.8), V89 (.0, .2)

[9] V01, V06, V09 (.1, .3, .9), V10-V11, V12-V14 (.0-.2), V16-V18, V19 (.3, .8, .9), V82 (.2-.9), V87.9, V88.9, V89 (.1, .3)

Table 4.3
Deaths attributable to drugs
Maine, 2005

Diagnosis	ICD-10-CM Diagnostic Code	Drug Attributable Fraction	Age (Years)	Total Deaths	Male		Female		Total
					Total Deaths	Drug Related Deaths	Total Deaths	Drug Related Deaths	
Direct Causes									
Drug Dependence	F11-F19(.2)	1	≥0	1	0	0	1	1	1
Nondependent abuse of drugs	F11-F19(.1)	1	≥0	4	3	3	1	1	4
Accidental poisoning by drugs	X41-42	1	≥0	102	67	67	35	35	102
Poisoning by drugs undetermined intent	Y11-Y12	1	≥0	8	1	1	7	7	8
Self-inflicted drug poisoning		1	≥0	19	10	10	9	9	19
Indirect Causes									
HIV/AIDS	B20-B24	0.05	≥0	11	9	0	2	0	0
Hepatitis B	B16.9	0.28	≥0	0	0	0	0	0	0
Homicide	X85-Y09,Y87.1	0.13	≥15	20	11	1	9	1	2
Total				165	101	**83**	64	**54**	**137**

Sources: Maine Department of Health and Human Services, Office of Data, Research and Vital Statistics, 2007; International Classification of Diseases, 10th revision, Clinical Modification (ICD-10-CM); Wickizer, 1999; NIDA/NIAAA, 1998

Table 4.4 Estimated mortality costs and years of potential life lost (YPLL)

		ALC YPLL	ALC Cost/YPLL	ALC Inflation	ALC Maine/Wash wage ratio	ALC Total costs	DRUG YPLL	DRUG Cost/YPLL	DRUG Inflation	DRUG Maine/Wash wage ratio	DRUG Total costs
Male	1-18	512	9942	0.2351	0.8239	5,179,888	64	9942	0.2351	0.8239	647,486
	19-24	476	15547	0.2351	0.8239	7,530,610	529	15610	0.2351	0.8239	8,403,016
	25-34	675	18494	0.2351	0.8239	12,703,145	1,125	18905	0.2351	0.8239	21,642,420
	35-44	928	19711	0.2351	0.8239	18,613,724	785	19323	0.2351	0.8239	15,435,505
	45-54	2235	16618	0.2351	0.8239	37,794,874	332	16231	0.2351	0.8239	5,483,527
	55-64	1546	9998	0.2351	0.8239	15,728,932	184	9218	0.2351	0.8239	1,725,962
	65+	884	6070	0.2351	0.8239	5,460,314	17	6058	0.2351	0.8239	104,798
		7255	14817	0.2351	0.8239	109,389,169	3,037	17842	0.2351	0.8239	55,139,770
Female	1-18	141	5079	0.2351	0.8297	733,872	0	5439	0.2351	0.8297	0
	19-24	241	7313	0.2351	0.8297	1,806,075	301	7491	0.2351	0.8297	2,310,625
	25-34	153	8369	0.2351	0.8297	1,312,164	408	8295	0.2351	0.8297	3,468,165
	35-44	372	8802	0.2351	0.8297	3,355,425	537	8705	0.2351	0.8297	4,790,339
	45-54	668	8131	0.2351	0.8297	5,566,006	604	7807	0.2351	0.8297	4,832,194
	55-64	647	6154	0.2351	0.8297	4,080,233	139	5335	0.2351	0.8297	759,928
	65+	806	7343	0.2351	0.8297	6,065,014	15	3666	0.2351	0.8297	56,352
		3027	7491	0.2351	0.8297	23,236,752	2,004	7994	0.2351	0.8297	16,416,670
TOTAL	1-18	673				5,913,760	67				647,486
	19-24	731				9,336,686	899				10,713,641
	25-34	866				14,015,309	1,635				25,110,586
	35-44	1351				21,969,148	1,351				20,225,844
	45-54	2784				43,360,880	879				10,315,721
	55-64	2341				19,809,166	334				2,485,890
	65+	1801				11,525,327	35				161,150
		10546				132,625,921	5,201				71,556,440

Sources: Maine Department of Health and Human Services, ODRVS, 2007; Wickizer, 1999; Rice et al., 1990; InflationData.com, 2007

Chapter 5
Crime

Evidence accumulated over the past twenty years has shown a strong link between drug and alcohol abuse and crime. Although the exact nature of the relationship remains unclear, there is little doubt that substance abuse increases the likelihood that certain crimes will be committed. A 1989 Department of Justice study found that in some cities as many as 50%-80% of persons arrested for felonies tested positive for drugs (Tonry & Wilson, 1990). Recent surveys of incarcerated populations provide further evidence of the strong link between crime and substance abuse. In 2004, approximately one in four federal inmates (26%) and one in three state inmates (32%) reported that they were under the influence of alcohol or illicit drugs at the time of their current offense (U.S. Department of Justice, 2007).

This chapter analyzes crime costs for Maine in 2005. It examines five types of costs related to criminal activity: (1) Law enforcement, (2) Judicial, (3) Correctional, and (4) Other societal costs.

The major findings of the analysis were:

- Of 14 arrests for homicide, an estimated 4 were related to alcohol and 2 to drug abuse.
- In 2005, 7,520 arrests were related to assaults (aggravated, sexual and other), of which an estimated 2,247 were related to alcohol abuse and 369 to drug abuse.
- Total estimated drug- and alcohol-related crime costs in 2005 were $214.4 million.
- Of the four major crime cost categories analyzed, law enforcement costs were highest ($101.1 million), followed by the cost of corrections ($44.0 million).

Methodology

Information was gathered from various sources on different criminal activities (offenses and arrests), corrections populations, numbers of crime victims, and property destruction. The variables were then adjusted to reflect criminal activity related specifically to drug and alcohol abuse.

The analysis was restricted to the set of crimes believed to be most closely linked to substance abuse (NIDA/NIAAA, 1998). They included the following Part I felonies:

- homicide
- assault (aggravated, sexual and other)
- robbery
- burglary
- larceny (property theft)
- auto theft

Less serious Part II offenses analyzed included:

- operating under the influence (OUI)
- liquor law violations
- public drunkenness
- stolen property (buying, receiving and selling)
- prostitution
- drug law violations (possession, sale, use, or manufacture).

The numbers of drug- and alcohol-related crimes were estimated by multiplying crime figures by attributable fractions in the same manner as done to derive other cost estimates. The attributable fractions used for this report were those used by NIDA/NIAAA (1998; Table C.1) and represent the most current evidence available regarding drug- and alcohol-related crime. The attributable fractions ranged from 5.1% for drug-related sexual assault to 100% for OUI. In other words, it was assumed that 5.1% of all sexual assaults are related to drug use; by definition, 100% of OUI offenses are related to alcohol use.

The attributable fractions used for the analysis are shown in Table 5.1 (crimes such as OUI with attributable fractions of 100% are not shown):

Table 5.1 Attributable fractions

	Alcohol	Drugs
	(%)	(%)
Homicide	30.0	15.8
Aggravated Assault	30.0	5.1
Sexual Assault	22.5	5.1
Other Assault	30.0	5.1
Robbery	3.4	27.2
Burglary	3.6	30.0
Larceny	2.8	29.6
Auto Theft	3.5	6.8
Stolen Property	0.0	15.1
Prostitution	0.0	12.8

To derive some of the cost estimates (correctional and judicial costs), it was necessary to convert numbers of arrests or offenses into dollar equivalents. This conversion was done using the same procedure as Rice et al. (1990), which assumed that costs were proportional to the numbers of crimes committed.

Results

Law Enforcement Costs

Police Protection:

Police protection costs were estimated based on the 31,760 arrests for Part I and II offenses committed in 2005 (Table 5.2). The numbers of the offenses were multiplied by the above attributable fractions to obtain estimates of the number of drug- and alcohol-related offenses committed. In 2005 the police protection costs for alcohol- and drug-related crimes were estimated at $36.8 million (Table 5.2). Based on 2002 data and adjusted for inflation (7.68% from 2002 to 2005; InflationData.com, 2007; US Department of Justice, 2007), cost per arrest is estimated at $3,552. For OUI, liquor law offenses, and public drunkenness offenses, the arrest cost from Baird et al. (2004) was used and adjusted for inflation, for a total of $45.63 (inflation was 16.59% from 2000 to 2005 and the cost per arrest for those offenses in 2000 was $39.14).

There were an estimated 4 homicides and 2,247 assaults in 2005 related to alcohol use or abuse. There were fewer drug-related crimes in these two categories, 2 and 369, respectively, but levels of drug-related robberies, burglaries and thefts were substantially higher compared to alcohol-related robberies, burglaries and thefts.

Table 5.2

Estimated cost of police protection

Maine, 2005

Type of offense	Total arrests	Attributable Fraction		Number of arrests due to:		Cost per arrest	Police protection costs		
		Alcohol	Drugs	Alcohol	Drugs		Alcohol	Drug	Total
Homicide	14	.30	.158	4	2	3,551.90	14,918	7,857	22,775
Aggravated assault	513	.30	.024	154	12	3,551.90	546,637	43,731	590,368
Sexual assault	116	.225	.051	26	6	3,551.90	92,705	21,013	113,718
Other assaults	6,891	.30	.051	2,067	351	3,551.90	7,342,843	1,248,283	8,591,126
Robbery	186	.034	.272	6	51	3,551.90	22,462	179,698	202,160
Burglary	1,233	.036	.30	6	370	3,551.90	157,662	1,313,848	1,471,510
Larceny-theft	5,582	.028	.296	156	1,652	3,551.90	555,148	5,868,705	6,423,853
Auto theft	314	.035	.068	11	21	3,551.90	39,035	75,840	114,876
OUI	7,274	1.00	.0	7,274	0	45.36	329,949	0	329,949
Liquor laws	4,104	1.00	.0	4,104	0	45.36	186,157	0	186,157
Public drunkenness	22	1.00	.0	22	0	45.36	998	0	998
Stolen property	234	0.00	.151	0	35	3,551.90	0	125,503	125,503
Prostitution	25	0.00	.128	0	3	3,551.90	0	11,366	11,366
Drug laws	5,252	0.00	1	0	5,252	3,551.90	0	18,654,579	18,654,579
TOTAL	31,760			13,830	7,755		$9,288,514	$27,550,422	**$36,838,936**

Sources: Maine Department of Public Safety, 2006; Harwood et al., 1998

Drug Control:

Demand reduction refers to programs and research related to drug abuse treatment and prevention that are designed to reduce the demand for drugs. Supply reduction refers to a wide scope of law enforcement related activities designed to reduce the supply of drugs.

Drug traffic control is a national priority involving a wide range of federal, state and local agencies. Because so many different agencies are involved in drug control it is difficult to estimate accurately the costs for Maine. National data on drug traffic control costs were obtained for 2005 (U. S. Department of Justice, 2007) and were used to compute the per capita costs for the relevant expenditure categories shown in Table 5.3 below. These per capita costs were then applied to Maine. Total estimated drug control expenditures for Maine in 2005 were $56.4 million.

Table 5.3

Drug Control Expenditures

Maine, 2005

Activity	Expenditures
Demand reduction	$34,047,220
Supply reduction	$22,306,830
TOTAL	$56,354,049

Source: US Department of Justice, 2007

The mandated duties of the Office of Substance Abuse include providing funds for the prevention and treatment of substance abuse disorders. The expenditures given in the Prevention category in Table 5.4 include only administrative and prevention costs (OSA, 2007). The largest portion of the $7.9 million prevention budget is federal grant money that provides funding to community coalitions so that they may develop and implement evidence-based prevention practices.

Table 5.4
Substance control expenditures
Maine, 2005

Funding source	Total expenditures	Expenditures	
Prevention - OSA		Alcohol (50%)	Drug (50%)
State general fund	281,102	140,551	140,551
Federal categorical	4,239,813	2,119,907	2,119,907
Safe and Drug Free Schools and Communities Act	2,089,521	1,044,761	1,044,761
Substance Abuse Prevention and Treatment Block Grant	1,286,510	643,255	643,255
Total	7,896,946	3,948,473	3,948,473

Judicial:

Legal and judicial costs were estimated based on the number of arrests for Part I and II crimes (Table 5.5). Since only 2002 cost figures were available from the U.S. Bureau of Justice Statistics, data for 2002 was used and adjusted for inflation. In 2002, 54,800 arrests were made in Maine. Total legal and adjudication costs were estimated at $80.0 million (U.S. Department of Justice, 2007). The cost per arrest was estimated as $1,460.29 and adjusted for inflation from 2002 to 2005 (.0768). A final cost per arrest of $1,572.44 was used for legal and adjudication costs in 2005.

The most costly Part I crime category was Other Assaults, $3.8 million, due to the large number of alcohol- related arrests. The most costly Part II crime category was drug law violations, $8.3 million. The total estimated 2005 cost for drug- and alcohol-related legal and adjudication activities was nearly $16.6 million, with drug abuse accounting for 73.5% of the costs.

Table 5.5

Legal and adjudication costs

Type of offense	Total arrests	Attributable Fraction		Number of arrests due to:		Cost per arrest	Legal and adjudication costs		
		Alcohol	Drugs	Alcohol	Drugs		Alcohol	Drug	Total
Homicide	14	0.3	0.158	4	2	1,572.44	6,604	3,478	10,082
Aggravated assault	513	0.3	0.024	154	12	1,572.44	241,999	19,360	261,358
Sexual assault	116	0.225	0.051	26	6	1,572.44	41,041	9,303	50,343
Other assaults	6,891	0.3	0.051	2,067	351	1,572.44	3,250,705	552,620	3,803,325
Robbery	186	0.034	0.272	6	51	1,572.44	9,944	79,553	89,497
Burglary	1,233	0.036	0.3	44	370	1,572.44	69,797	581,646	651,443
Larceny-theft	5,582	0.028	0.296	156	1,652	1,572.44	245,766	2,598,099	2,843,865
Auto theft	314	0.035	0.068	11	21	1,572.44	17,281	33,575	50,856
OUI[1]	7,274	1	0	7,274	0	45.63	331,913	0	331,913
Liquor laws[2]	4,104	1	0	4,104	0	45.63	187,266	0	187,266
Public drunkenness[3]	22	1	0	22	0	45.63	1,004	0	1,004
Stolen property	234	0	0.151	0	35	1,572.44	0	55,561	55,561
Prostitution	25	0	0.128	0	3	1,572.44	0	5,032	5,032
Drug laws	5,252	0	1	0	5,252	1,572.44	0	8,258,455	8,258,455
TOTAL	31,760			13,830	7,755		$4,403,319	$12,196,680	$16,599,999

Sources: Wickizer, 1999; Maine Department of Public Safety, 2005; US Department of Justice, 2007; Harwood et al, 1998; Rice et al., 1990

Corrections

State Corrections:

Total state substance abuse related corrections costs were estimated at $28.0 million (Table 5.6), with drug related costs accounting for $18.9 million or 67.3% of the total costs.

The Maine Department of Corrections did not have access to estimates of the number of state correctional inmates imprisoned for each offense in 2005. The Department could provide, however, statistics on the number of inmates per offense for 2006 as well as the average daily population for 2005. The percentages of inmates per offense from 2006 were applied to the 2005 data to provide the estimates included in Table 5.6. The number of inmates related to each offense was multiplied by the attributable fractions used by Harwood et al. (1998) to estimate the proportion of offenses attributable to alcohol or drug use. The number of alcohol and drug related offenses were then multiplied by the average annual cost per inmate of $35,430 (Maine Department of Corrections, 2007). As Table 5.6 shows, the most costly offender category was drug law violations ($10.8 million) followed by homicide ($4.0 million) and burglary ($3.3 million).

Table 5.6

Estimated cost of state corrections, Maine, 2005

Offense	Total inmates	Attributable fractions		Substance related crimes		State corrections costs		
		Alcohol	Drugs	Alcohol	Drugs	Alcohol	Drugs	Total
Homicide	245	.30	.158	74	39	$2,604,730	$1,371,825	$3,976,555
Aggravated assault	97	.30	.024	29	2	$1,033,939	$82,715	$1,116,654
Sexual assault	202	.225	.051	45	10	$1,610,558	$365,060	$1,975,618
Other assaults	106	.30	.051	32	5	$1,123,414	$190,980	$1,314,395
Robbery	150	.034	.272	5	41	$180,276	$1,442,212	$1,622,488
Burglary	273	.036	.30	10	82	$348,358	$2,902,982	$3,251,340
Larceny-theft	159	.028	.296	4	47	$157,742	$1,667,558	$1,825,300
Auto theft	0	.035	.068	0	0	$0	$0	0
OUI	60	1.00	.0	60	0	$2,120,900	$0	$2,120,900
Liquor laws	0	1.00	.0	0	0	$0	$0	0
Public drunkenness	0	1.00	.0	0	0	$0	$0	0
Stolen property	0	0.00	.151	0	0	$0	$0	0
Prostitution	0	0.00	.128	0	0	$0	$0	0
Drug laws	306	0.00	1	0	306	$0	$10,836,473	$10,836,473
Other	485					$0	$0	0
TOTAL	2,083					$9,179,918	$18,859,804	$28,039,722

Sources: Maine Department of Corrections, 2007; Harwood et al, 1998

County Corrections:

In Maine, some individuals arrested for alcohol- and drug-related crimes are booked into county jails. Thus, some of the expense of operating these jails should be included in the analysis as drug- and alcohol-related costs. The same general procedure for estimating state corrections costs was followed for county corrections costs. The last available county corrections costs were for 2002, estimated at $38,987,000 (US Department of Justice, 2007). Increasing this amount by 7.68%, the rate of inflation from 2002 to 2005, provides an estimated cost of $41,981,202.

In 2005, there were 1,687 people on average in the county jails on any given day (Maine Department of Corrections, 2007). Total alcohol- and drug-related county corrections costs for 2005 were estimated at $16.0 million with alcohol-related costs accounting for $10.6 million (66%).

Table 5.7

Estimated cost of county corrections Maine, 2005

Type of offense	Proportion of county inmates	Number of county inmates	Attributable fractions		Number of county inmates		Cost per inmate	County correction costs		
			Alcohol	Drugs	Alcohol	Drugs		Alcohol	Drug	Total
Homicide	.002	3	0.3	0.158	1	1	$24,885	$25,189	$13,266	$38,455
Aggravated assault	.036	61	0.3	0.024	18	1	$24,885	$453,397	$36,272	$489,669
Sexual assault	.003	5	0.225	0.051	1	0	$24,885	$28,337	$6,423	$34,760
Other assaults	.076	128	0.3	0.051	38	7	$24,885	$957,171	$162,719	$1,119,891
Robbery	.012	20	0.034	0.272	1	6	$24,885	$17,128	$137,027	$154,155
Burglary	.030	51	0.036	0.3	2	15	$24,885	$45,340	$377,831	$423,171
Larceny-theft	.107	181	0.028	0.296	5	53	$24,885	$125,776	$1,329,629	$1,455,404
Auto theft	.014	24	0.035	0.068	1	2	$24,885	$20,571	$39,966	$60,537
OUI	.115	194	1	0	194	0	$24,885	$4,827,838	$0	$4,827,838
Liquor laws	.038	64	1	0	64	0	$24,885	$1,595,286	$0	$1,595,286
Public drunkenness	.059	100	1	0	100	0	$24,885	$2,476,891	$0	$2,476,891
Stolen property	.011	19	0	0.151	0	3	$24,885	$0	$69,731	$69,731
Prostitution	.007	12	0	0.128	0	2	$24,885	$0	$37,615	$37,615
Drug laws	.076	128	0	1	0	128	$24,885	$0	$3,190,571	$3,190,571
TOTAL								$10,572,923	$5,401,050	$15,973,973

Other Societal Costs:

Other social costs arising from drug and alcohol abuse include the costs of lost productivity due to incarceration, the value of lost productivity due to criminal victimization, and the cost of property damage arising from substance abuse-related accidents.

Productivity Losses Due to Incarceration:

Inmates of state prisons and local jails are unable to participate in the economy as workers. This results in a substantial economic cost to society in the form of lost productivity. The cost estimates were based upon the numbers of individuals entering state prisons and local jails from the Maine Department of Corrections. We assumed, as did Rice et al. (1990), that one year was served per offense even though that would tend to inflate the cost of Part II offenses. Since annual costs were calculated, the analysis was based upon a maximum of 12 months served, even though individuals served much longer for some crimes (e.g., homicide). Numbers of person years served related to alcohol and drug use match the number of inmates in the state and county system as included in Tables 5.6 and 5.7. Productivity losses were calculated based upon a $33,925 median annual wage for Maine (Maine Department of Labor, 2005).

The findings are presented in Table 5.8. Total productivity losses due to incarceration were estimated to be $42.8 million, with $20.0 million representing losses associated with incarceration in state prisons. Productivity losses were evenly split between alcohol-related losses, $21.3 million, and drug-related productivity costs of $21.4 million.

Table 5.8

Estimated productivity losses due to incarceration, Maine, 2005

	Alcohol		Drugs		Total losses
Offense	Person-years served	Productivity losses	Person years served	Productivity losses	
State prisons					
Homicide	74	$2,510,450	39	$1,313,552	$3,824,002
Assault	61	$2,069,425	7	$237,475	$2,306,900
Robbery	5	$169,625	41	$1,390,925	$1,560,550
Burglary	10	$339,250	82	$2,781,850	$3,121,100
Auto theft	0	$0	0	$0	$0
OUI	60	$2,035,500	0	$0	$2,035,500
Stolen property	0	$0	0	$0	$0
Drug laws	0	$0	306	$10,381,050	$10,381,050
Total	210	$7,124,250	475	$16,104,852	$23,229,102
Local jails					
Homicide	1	$34,339	1	$18,085	$52,424
Assault	56	$1,899,800	8	$271,400	$2,171,200
Robbery	1	$38,631	6	$203,550	$242,181
Burglary	2	$67,850	15	$508,875	$576,725
Auto theft	0	$0	0	$0	$0
OUI	194	$6,581,450	0	$0	$6,581,450
Stolen property	0	$0	0	$0	$0
Drug laws	0	$0	128	$4,342,400	$4,342,400
Liquor laws	64	$2,171,200	0	$0	$2,171,200
Public drunkenness	100	$3,392,500	0	$0	$3,392,500
Total	418	$14,185,770	158	$5,344,310	$19,530,080
Total state and local	628	$21,310,020	632	$21,449,162	$42,759,182

Property Destruction:

State data on property destruction costs for 2005 were available from the Maine Department of Public Safety (Crime in Maine, 2005). Estimate of property destruction costs attributable to alcohol and drug use were calculated using the drug and alcohol attributable fractions included in Table 5.1 earlier in this chapter. Overall, property destruction costs attributable to drug or alcohol use were estimated at $7.5 million, with drug-related costs accounting for $6.5 million (87.8%).

Table 5.9

Property destruction due to crime, Maine, 2005

Type of offense	Property destruction losses	Alcohol related losses	Drug related losses	Total losses
Robbery	$186,541	$6,342	$50,739	$57,081
Murder	$1,200	$360	$190	$550
Larceny	$12,049,472	$337,385	$3,566,644	$3,904,029
Burglary	$7,920,807	$285,149	$2,376,242	$2,661,391
Motor vehicle theft	$8,175,761	$286,152	$555,952	$842,104
TOTAL		$915,388	$6,549,767	$7,465,155

Criminal Victimization:

The economic cost associated with criminal victimization is the value of lost productivity due to time lost from work and the cost of medical care that the victim requires. There were no state level data on the number of crime victims, so the number of Part I offenses were used for the analysis, based upon the assumption that there was one victim per offense. The average number of days lost from work was estimated in an earlier report by Liu (1992). The number of offenses was multiplied by the estimated monetary loss, based on lost workdays, and the product was then multiplied by the appropriate attributable fraction for the offense. The estimated cost of a work day loss was calculated by taking the median salary for Maine in 2005 of $33,925 (US Department of Labor, 2007). and dividing by 260 work days ($130.48/day). To calculate the loss of a work day for forcible rape, the median annual salary for women was used, ($29,532/260=$113.59; US Census Bureau, 2005 American Community Survey, 2007). The findings are shown in Table 5.8. As indicated, the total economic loss in 2005 due to criminal victimization related to drug and alcohol abuse was $2.5 million, with drug abuse accounting for $2.1 million.

Table 5.10

Estimated productivity losses for victims of crime, Maine, 2005

Offense	Number of offenses	Average work days	Cost per work day	Total	AAF	DAF	Alcohol losses	Drug losses	Total losses
Forcible rape	322	4.6	$113.59	$168,249	0.225	0.024	$37,856	$4,038	$41,894
Aggravated assault	826	3.7	$130.48	$398,773	0.300	0.051	$119,632	$20,337	$139,969
Robbery	323	4.4	$130.48	$185,438	0.034	0.272	$6,305	$50,439	$56,744
Burglary	6,277	1.7	$130.48	$1,392,339	0.036	0.300	$50,124	$471,702	$467,826
Larceny	24,153	1.7	$130.48	$5,357,522	0.028	0.296	$150,011	$1,585,826	$1,735,837
Motor vehicle	1,344	2.7	$130.48	$473,486	0.035	0.068	$16,572	$32,197	$48769
TOTAL							$380,500	$2,110,540	$2,491,040

Sources: NIDA/NIAAA, 1998, Table B5; US Census Bureau, Census 2000, Table P85

Summary

Summary information is included in Table 5.11. With costs estimated at $214.4 million, criminal activity represents a major component of overall drug and alcohol-related costs, accounting for 23.9% of overall drug and alcohol costs. The category with the greatest cost was law enforcement ($101.1 million), followed by corrections ($44.0 million).

Table 5.11
Summary of crime costs
Maine, 2005

		$	Percent of total cost	Alcohol $	Drug $
Law enforcement	Police protection	36,838,936	18.0	9,288,514	27,550,422
	Substance control	64,250,995	29.5	3,948,473	60,302,522
Judicial		16,599,999	8.1	4,403,319	12,196,680
Corrections	State	28,039,722	13.7	9,179,918	18,859,804
	County	15,973,973	7.8	10,572,923	5,401,050
Productivity loss		42,759,182	18.0	21,310,020	21,449,162
Property destruction		7,465,155	3.7	915,388	6,549,767
Victimization		2,491,040	1.2	380,500	2,110,540
TOTAL		214,419,002	100.0	59,999,055	154,419,947
				(28.0)	(72.0)

Chapter 6

Medical Care

Alcohol or drug abuse may increase the risk of illness or injury and thereby increase the use of health care services. The effects of substance abuse on health care utilization may be obvious and immediate or more indirect and long term. The link between alcohol and drug use is clear in the case of an individual overdosing on drugs and then requiring hospitalization, or a drunk driver who sustains serious injury in an auto accident and requires emergency hospital treatment. But prolonged alcohol abuse can also increase the risk for a number of diseases, including stomach cancer, cancer of the esophagus, respiratory tuberculosis, diabetes, and hypertension, thereby increasing the demand for costly medical care as well as nursing home care.

This chapter analyzes medical costs for Maine for 2005 related to drug and alcohol abuse. Four types of medical costs are reported: inpatient hospital costs, outpatient medical costs, prescription drugs and non-durable medical supplies, and nursing home costs.

The major findings of the analysis were:

- There were approximately 8,349 hospital discharges in Maine in 2005 directly or indirectly related to drug and alcohol use or abuse.
- The total cost of providing hospital inpatient treatment for these patients, including adjustment for longer stays due to co-occurring substance dependency, was estimated at $111.2 million, including $87.0 million, or 78.2% related to alcohol use.
- The estimated cost of outpatient medical care was $51.3 million.
- Prescription drug costs and nursing home costs attributable to alcohol were, respectively, $18.2 million and $6.2 million.
- The total estimated medical cost was $186.8 million.

Methodology

The estimation of hospital inpatient costs was based upon data from the Maine Health Data Organization (MHDO, 2007), which gathers information on total hospital charges, length of stay, diagnosis, gender and age for all hospital discharges in Maine. For this analysis, MHDO supplied data on patients discharged within selected diagnostic categories related to drug and alcohol abuse. These data were used to estimate inpatient hospital costs. The adjustment process used followed the same approach as used to estimate mortality costs (see Chapter 4) and is commonly known as the illness-specific approach (NIDA/NIAAA, 1998).

This illness-specific approach does not take into account the extra days a patient may stay in an inpatient hospital setting if he or she has a co-occurring alcohol or drug disorder. Estimating the costs of these extra days was not possible using the data obtained for this analysis, but it was possible to use cost estimates generated by the NIDA/NIAAA (1998) national study and extrapolate these costs to Maine. The NIDA/NIAAA study, which was based on analysis of over 200,000 records from the U.S. Hospital Discharge Survey, found that hospital inpatient costs associated with longer stays due to co-occurring alcohol or drug conditions represented 21.3% of substance abuse specific- and substance abuse related-costs. The Maine cost estimates derived from the analysis of inpatient discharge data were increased by this same percentage (21.3%) to account for the longer hospital stays associated with secondary (co-occurring) diagnoses related to substance abuse.

The estimation of alcohol- and drug-related outpatient costs was also based upon data from the MHDO. The same approach was used to apply attributable fractions to these costs.

Cost estimates for prescription drugs in Maine came from data from the Kaiser Family Foundation (2007). As reported in NIDA/NIAAA (1998), the attributable fraction of 2.2% can be applied to prescription drugs used for the medical treatment of diseases and injuries related to substance abuse. This figure is based upon earlier research by Harwood et al. (1984), indicating that 2.2% of expenditures in this category can reasonably be attributed to alcohol abuse (no equivalent estimates have been made for drug abuse). Cost estimates for nursing home care also came from the Kaiser Family Foundation (2007). Based upon research from the 1985 National Nursing Home Survey (NIDA/NIAAA, 1998), it was assumed that 1.0% of all nursing home expenditures could reasonably be related to alcohol abuse.

Results

As shown in Table 6.1, 8,349 hospital discharges occurred as a result of a medical condition or injury related to drug or alcohol abuse. Approximately 5,689 or 68.1% of these were related to alcohol abuse. Males accounted for 4,715 discharges. Of the $91.7 million in hospital inpatient costs shown in Table 6.1, $71.7 million (78.2%) were for hospital care for an alcohol-related condition or injury. The major cost categories were: injuries and poisonings, alcohol psychoses and dependence, drug psychoses and dependence, acute pancreatitis, cerebrovascular disease, and various cancers.

As discussed earlier, the $91.7 million in hospital inpatient costs shown in Table 6.1 is based on data from the MHDO. These costs do not include incremental expenses associated with treating patients requiring longer hospitalization resulting from co-occurring alcohol or drug dependence. A NIDA/NIAAA report estimated these incremental costs at 21.3% of direct alcohol- and drug-related hospital costs. To account for these other indirect costs, the estimate of $91.7 million should be multiplied by 1.213, yielding a total cost estimate for alcohol- and drug-related hospital inpatient costs of $111.2 million.

The estimation of alcohol- and drug-related outpatient costs was also based upon data from the MHDO. The same approach was used to apply attributable fractions to these costs. The total alcohol- and drug-related outpatient cost, as shown in Table 6.2 was $51.3 million. Alcohol related costs represented 77.1% ($39.5 million) of these outpatient costs.

Two other medical cost categories included here are prescription drug and nursing home costs. The estimates for these two categories are shown in Table 6.3. For prescription drugs, the estimated cost was $18.2 million. The estimated cost for nursing home care was $6.2 million. Both of these cost categories are attributable to alcohol. The total estimated alcohol- and drug-related medical cost for these two categories combined was $24.4 million.

Table 6.1
Drug- and Alcohol-Related Hospital Inpatient Direct Costs, Maine, 2005

Diagnosis or Condition	ICD-9 Codes	Age Range	AAF [1]	Est. Number of Alcohol-Related Discharges [2]		Estimated Alcohol-Related Inpatient Charges [3]		
				Males	Females	Males	Females	Total
Alcoholic psychoses	291	All	1	1018	434	$6,633,834	$2,600,594	$9,234,428
Alcohol dependence syndrome	303	All	1	728	355	$3,523,814	$1,801,475	$5,325,289
Non-dependent abuse of alcohol	305.0	All	1	68	28	$332,928	$148,403	$481,331
Alcoholic polyneuropathy	357.5	All	1	3	0	$35,007	$0	$35,007
Alcoholic cardiomyopathy	425.5	All	1	3	0	$35,226	$0	$35,226
Alcoholic gastritis	535.3	All	1	20	9	$231,847	$60,426	$292,273
Alcoholic fatty liver	571.0	All	1	0	0	$0	$0	$0
Acute alcoholic hepatitis	571.1	All	1	31	14	$444,857	$244,076	$688,933
Alcoholic cirrhosis of the liver	571.2	All	1	127	48	$2,570,776	$853,471	$3,424,247
Alcoholic liver damage, unspecified	571.3	All	1	2	1	$19,631	$13,172	$32,803
Excessive blood levels of alcohol	790.3	All	1	0	0	$0	$0	$0
Toxic Effect of Alcohol	980.0	All	1	15	6	$139,263	$64,600	$203,863
Accidental Poisoning by Alcohol	E860.0-.1	All	1	5	1	$64,159	$8,632	$72,791
Cancer of the lip, tongue oral cavity, pharynx [4]	140-149	>=35	0.5	19	4	$373,799	$90,317	$464,116
Cancer of the esophagus	150	>=35	0.75	42	15	$1,580,749	$354,690	$1,935,439
Cancer of the stomach	151	>=35	0.2	15	8	$531,079	$158,244	$689,323
Cancer of the liver and intrahepatic bile ducts	155.0-155.2	>=35	0.15	7	3	$132,975	$77,913	$210,888
Cancer of the larynx	161	>=35	0.49	9	5	$261,893	$98,065	$359,958
Essential hypertension	401	>=35	0.08	6	9	$67,968	$76,082	$144,050
Cerebrovascular disease	430-438	>=35	0.07	132	139	$2,222,921	$2,317,520	$4,540,441
Respiratory tuberculosis	011-012	>=35	0.25	1	0	$37,167	$0	$37,167
Diabetes mellitus	250	>=35	0.05	35	28	$610,767	$439,963	$1,050,729
Pneumonia and influenza	480-487	>=35	0.05	126	125	$1,840,107	$1,705,254	$3,545,361
Diseases of the esophagus, stomach, duodenum	530-537, exc 535.3	>=35	0.1	86	102	$1,497,775	$1,458,745	$2,956,521

Chronic hepatitis	571.4	>=35	0.5	1	1	$16,737	$8,802	$25,539
Cirrhosis without mention of alcohol	571.5	>=35	0.5	25	29	$476,057	$403,187	$879,243
Other chronic nonalcoholic liver damage & disease	571.8	>=35	0.5	1	4	$14,871	$62,013	$76,884
Unspecified chronic liver disease w/o mention of alcohol	571.9	>=35	0.5	1	1	$5,557	$9,524	$15,081
Portal hypertension	572.3	>=35	0.5	7	3	$215,147	$42,990	$258,137
Acute pancreatitis	577.0	>=35	0.42	223	189	$4,113,357	$3,467,833	$7,581,190
Chronic pancreatitis	577.1	>=35	0.6	43	26	$617,525	$339,814	$957,340
Injuries and other poisonings [5]	see Calculations	>=15	varies	576	733	$13,388,858	$12,750,976	$26,139,834
Total Alcohol-Related Inpatient Discharges and charges				**3371**	**2318**	**$42,036,648**	**$29,656,781**	**$71,693,429**

Table 6.1 (continued)

Diagnosis or Condition			**DAF [1]**	**Est. Number of Drug-Related Discharges [2]**		**Estimated Drug-Related Charges Costs [3]**		
				Males	**Females**	**Males**	**Females**	**Total**
Drug psychoses	292	All	1	587	504	$3,360,294	$3,206,849	$6,567,143
Drug dependence	304	All	1	350	313	$1,875,091	$1,697,643	$3,572,734
Nondependent abuse of drugs	305.2-.9	All	1	62	33	$355,388	$185,909	$541,297
Polyneuropathy due to drugs	357.6	All	1	0	3	$0	$55,908	$55,908
Drug dependence complicating pregnancy, childbirth, or puerperium	648.3	All	1	0	29	$0	$131,190	$131,190
Drugs affecting fetus or newborn via placenta or breast	760.72, .73, .75	All	1	0	0	$0	$0	$0
Drug withdrawal syndrome in newborn	779.5	All	1	4	5	$151,775	$100,948	$252,723
Fetal damage due to drugs	655.5	All	1	0	1	$0	$4,180	$4,180
Poisoning by opiates and related narcotics	965.0	All	1	113	86	$2,411,925	$980,196	$3,392,121

Poisoning by sedatives and hypnotics	967	All	1	17	20	$201,443	$188,863	$390,306
Poisoning by central nervous system muscle tone depressants	968.0	All	1	3	5	$7,989	$45,720	$53,709
Poisoning by psychotropic agents	969	All	1	196	312	$1,956,743	$2,844,145	$4,800,888
Poisoning by central nervous system stimulants	970	All	1	12	5	$160,046	$45,158	$205,204
Total Drug-Related Inpatient Discharges and Charges				**1344**	**1316**	**$10,480,694**	**$9,486,709**	**$19,967,403**
Total Drug and Alcohol-Related Inpatient Discharges and Charges				**4715**	**3634**	**$52,517,342**	**$39,143,490**	**$91,660,832**

Notes and Sources:

[1] AAF and DAF refer to alcohol and drug attributable fractions (Wickizer, 1999, and NIDA/NIAAA, 1998).

[2] Substance-related discharges are the total number of discharges (MHDO, 2003) multiplied by the corresponding attributable fraction.

[3] Substance-related charges are the total charges for these conditions multiplied by the corresponding attributable fraction.

[4] AAF is 40% in women.

[5] See Appendix B.1 for the specific injury and accident codes that make up this category.

Table 6.2

Estimated Alcohol- and Drug-Related Hospital Outpatient Charges, Maine, 2005

Diagnosis or Condition	AAF [1]	Est. Number of Alcohol-Related Outpatient Visits [2]		Estimated Alcohol-Related Outpatient Charges [3]		
		Males	Females	Males	Females	Total
Alcoholic psychoses	1	386	177	$421,514	$166,642	$588,156
Alcohol dependence syndrome	1	3,886	2,198	$3,067,629	$1,506,968	$4,574,597
Non-dependent abuse of alcohol	1	2,705	1,392	$2,039,810	$1,149,448	$3,189,258
Alcoholic polyneuropathy	1	1	2	$677	$828	$1,505
Alcoholic cardiomyopathy	1	7	1	$8,877	$348	$9,225
Alcoholic gastritis	1	63	17	$56,998	$17,073	$74,071
Alcoholic fatty liver	1	5	3	$606	$885	$1,491
Acute alcoholic hepatitis	1	65	28	$45,588	$13,868	$59,456
Alcoholic cirrhosis of the liver	1	172	50	$107,938	$28,954	$136,892
Alcoholic liver damage, unspecified	1	36	6	$17,696	$2,324	$20,020
Alcohol affecting fetus or newborn via placenta or breast	1	21	11	$17,345	$7,423	$24,768
Excessive blood levels of alcohol	1	4	1	$1,265	$99	$1,364
Toxic effects of ethyl alcohol	1	24	15	$25,571	$16,520	$42,090
Accidental poisoning by alcohol	1	0	0	$0	$0	$0
Cancer of the lip, tongue, oral cavity or pharynx [4]	0.5	663	201	$1,561,625	$433,130	$1,994,755
Cancer of the esophagus	0.75	967	212	$1,752,998	$324,092	$2,077,090
Cancer of the stomach	0.2	85	38	$155,225	$70,557	$225,782
Cancer of the liver and intrahepatic bile duct	0.15	45	35	$65,439	$55,241	$120,680
Cancer of the larynx	0.49	258	114	$626,008	$215,819	$841,826
Essential hypertension	0.08	3,335	4,537	$714,490	$908,048	$1,622,538
Cerebrovascular disease	0.07	594	571	$418,566	$426,725	$845,291
Respiratory tuberculosis	0.25	8	8	$1,856	$1,406	$3,262

Diabetes mellitus	0.05	531	3,196	$664,699	$702,882	$1,367,582
Pneumonia and influenza	0.05	270	301	$180,383	$172,901	$353,285
Diseases of the esophagus, stomach, duodenum	0.1	897	1,246	$1,013,758	$1,268,924	$2,282,682
Chronic hepatitis	0.5	43	120	$31,743	$37,213	$68,956
Cirrhosis without mention of alcohol	0.5	514	283	$265,541	$142,184	$407,724
Other chronic nonalcoholic liver damage	0.5	153	166	$137,080	$115,985	$253,065
Unspecified chronic lever disease w/o mention of alcohol	0.5	17	22	$6,579	$5,614	$12,193
Portal hypertension	0.5	17	15	$15,978	$19,114	$35,092
Acute pancreatitis	0.42	240	268	$278,769	$234,288	$513,056
Chronic pancreatitis	0.6	143	123	$169,467	$97,064	$266,531
Injuries and poisonings [5]	varies	12,361	12,097	$9,302,905	$8,190,960	$17,493,865
Total Alcohol-Related Outpatient Visits and Charges		**28,515**	**27,453**	**$23,174,621**	**$16,333,525**	**$39,508,146**

(continue on next page)

Table 6.2 (continued)

Diagnosis or Condition	DAF [1]	Est. Number of Drug-Related Outpatient Visits [2]		Estimated Drug-Related Charges [3]		
		Males	Females	Males	Females	Total
Drug psychoses	1	558	484	$437,356	$344,580	$781,936
Drug dependence	1	7,024	5,700	$4,338,309	$3,649,709	$7,988,018
Non-dependent abuse of drugs	1	1,501	901	$848,469	$544,299	$1,392,768
Polyneuropathy due to drugs	1	1	2	$1,242	$528	$1,770
Drug dependence complicating pregnancy, childbirth, or puerperium	1	0	42	$0	$37,140	$37,140

Drugs affecting fetus or newborn via placenta or breast	1	4	8	$2,414	$5,506	$7,920
Drug withdrawal syndrome in newborn	1	19	10	$2,127	$1,432	$3,559
Fetal damage due to drugs	1	0	141	$0	$85,961	$85,961
Poisoning by opiates and related narcotics	1	116	82	$184,694	$128,738	$313,432
Poisoning by sedatives and hypnotics	1	21	31	$44,286	$44,974	$89,260
Poisoning by central nervous system muscle tone depressants	1	7	8	$12,309	$11,861	$24,170
Poisoning by psychotropic agents	1	244	373	$389,774	$614,077	$1,003,851
Poisoning by central nervous system stimulants	1	11	7	$17,601	$8,466	$26,067
Total Drug-Related Visits and Charges		**9,506**	**7,789**	**$6,278,581**	**$5,477,271**	**$11,755,852**
Total Drug and Alcohol-Related Outpatient Visits and Charges		**38,021**	**35,242**	**$29,453,202**	**$21,810,796**	**$51,263,998**

Notes and Sources:

[1] AAF and DAF refer to alcohol and drug attributable fractions (Wickizer, 1999, and NIDA/NIAAA, 1998).

[2] Substance-related visits are the total number of outpatient visits (MHDO, 2007) multiplied by the corresponding attributable fraction.

[3] Substance-related charges are the total charges for these conditions multiplied by the corresponding attributable fraction.

[4] AAF is 40% among women.

[5] See Appendix B.2 for the specific injury and accident codes that make up this category.

Table 6.3

Other medical costs, Maine, 2005

Cost category	Total cost	Attributable fraction	Cost
Prescription drugs[10]	$825,913,980	2.2%	$18,170,108
Nursing home care[11]	$622,000,000	1.0%	$6,220,000
TOTAL	$1,447,913,980		$24,390,108

Summary

Total medical costs associated with drug and alcohol abuse for Maine in 2005 were estimated at $186.8 million, including the added cost of treating illnesses unrelated to substance abuse among persons with a co-occurring drug or alcohol disorder. Of this amount $111.2 million represents inpatient hospital care; 78.2% of the total inpatient costs were related to medical problems and injuries resulting from alcohol use and abuse. Outpatient medical services accounted for $51.3 million, while prescription drugs accounted for $18.2 million, and nursing home care accounted for another $6.2 million.

[10] Kaiser Family Foundation. (2007). Total retail sales for prescription drugs filled at pharmacies, 2005. Available: www.statehealthfacts.org (Accessed May 15, 2007).

[11] Kaiser Family Foundation. (2007). Maine: Distribution of health care expenditures by service (in millions), 2004. Available: www.statehealthfacts.org (Accessed May 15, 2007).

Chapter 7
Other Related Costs

In addition to the costs examined in the previous chapters, there are three other drug and alcohol-related costs that are included in this analysis. These are the substance abuse related costs of: 1) child welfare and the administration of other social welfare programs, 2) fire protection and the destruction caused by fire, and 3) the non-medical costs of motor vehicle accidents. The general methodology used to estimate these costs was similar to that used to estimate other costs. Attributable risk coefficients, used by Rice at al. (1990) and NIDA/NIAAA (1998), were applied to cost data obtained from secondary data sources and used to generate estimates of costs related to drug and alcohol abuse.

The major findings of the analysis were:

- An estimated $52.3 million in child welfare costs related to substance abuse was spent in Maine during 2005.
- An estimated $2.3 million was spent on social welfare administration in Maine during 2005 related to drug and alcohol abuse.
- Alcohol is believed to play a role in a large proportion of fires. In 2005, the estimated cost of these fires in Maine was $9.2 million.
- The cost of alcohol-related motor vehicle crashes in Maine in 2005 is estimated at $48.4 million.
- The combined cost of all three cost categories was $112.2 million

Methodology

Since the methods used to derive the cost estimates vary among the three areas, the methodological description is provided as part of the results sections.

Results

Child welfare

Although there is little documented data on this subject for Maine, a report by the Maine Bureau of Child and Family Services (BCFS, 2003) to the Maine Legislature indicates that 50% or more of the Bureau's clients in SFY03 needed substance abuse services. This estimate is supported by data from the National Center on Addiction and Substance Abuse at Columbia University (CASA, 1999), which states that in a survey of child welfare professionals, the vast majority felt that "substance abuse causes or contributes to at least half of all cases of child maltreatment." This report goes on to suggest that, based on additional research, an average of 70% of cases of child abuse and neglect are directly or indirectly associated with substance abuse. For this report, we will use a conservative estimate of 55% and assume that of the substance-abuse related cases, 67% were due to alcohol abuse by parents or guardians and 33% were due to drug abuse, based on NIDA/NIAAA's distribution of social welfare administration costs.

The estimated total cost of protecting Maine's children from abuse and neglect in 2005 was $95.0 million (OCFS, 2007). Applying the above proportions to this total, child welfare costs due to substance abuse were $52.3 million, with $34.8 million due to alcohol abuse and $17.4 million due to drug abuse.

Social Welfare Administration

Social welfare programs serve individuals with substance abuse problems. Therefore, it is appropriate to include a portion of these expenses as part of the overall costs of substance abuse. Direct welfare payments to clients, however, are considered transfer (redistribution) payments, and thus are not included.

Drug and alcohol-related administrative costs for social welfare programs are shown in Table 8.1. The first program categories shown are OASDI and SSI, two federal programs representing Old Age, Survivors and Disability Insurance (Social Security Administration, OASDI, Table 2) and Supplemental Security Income (Social Security Administration, Table SSI-7).

In December 2005 in Maine, 269,310 persons (20.5% of the total population) were receiving Social Security benefits (162,980 retired workers, 24,900 widows and widowers, 45,290 disabled workers, 13,520 wives and husbands, and 22,620 children). In December 2005, 31,978 persons were receiving SSI (2,449 aged and 29,529 disabled and blind) (SSA, 2007).

The next program category represents Temporary Assistance for Needy Families (U.S. Department of Health and Human Services, 2007, TANF, Table C) and the food stamp program (U.S. Department of Agriculture, 2007).

Table 7.1
Estimated Administrative Costs of Selected Social Welfare Programs
Attributed to Substance Abuse, Maine, 2005

Program	Total Admin. Costs	Attributed to Alcohol or Drug Abuse % [1]	Alcohol and Drug Admin. Costs	Attributed to: Alcohol (67%) [1]	Drugs (33%) [1]
OASDI [2]	$69,836,000	1.7	$1,187,212	$795,432	$391,780
SSI [3]	$10,065,168	3.0	$301,955	$202,310	$99,645
Public Assistance: TANF [4]	$1,176,458	5.2	$61,176	$40,988	$20,188
Food Stamps [5]	$9,569,964	5.2	$497,638	$333,418	$164,221
Veterans Compensation and Pension [6]	$12,340,409	1.7	$209,787	$140,557	$69,230
Total			**$2,257,768**	**$1,512,705**	**$745,063**

Sources:
[1] NIDA/NIAAA, 1998, Table D.3.
[2] Social Security Administration; Old Age, Survivors and Disability Insurance (OASDI), 2006, Table 5.J1 (CY 2005)
[3] Social Security Administration; Supplemental Security Income (SSI), 2006,Table 7.B7 (CY 2005)
[4] U.S. Dept. of Health and Human Services; Temporary Assistance for Needy Families (TANF), Table B (FY 2005)
[5] U.S. Dept. of Agriculture; Food Stamp Program Annual Benefits (FY 2005)
[6] U.S. Department of Veterans Affairs, 2006: Veterans Benefits Administration, Annual Benefits Report (FY 2005) p. 130

The third category of drug- and alcohol-related social welfare administration costs is veteran's pensions and rehabilitation (U.S. Veterans Administration, Table 22). As shown in Table 7.1, only a small percentage of the total administrative costs can be considered alcohol- or drug-related (NIDA/NIAAA, 1998). The total estimated cost for all social welfare programs combined is approximately $2.3 million.

Fire Destruction

Alcohol plays a role in economic losses resulting from fire destruction. While the extent of this role is unclear, the best available information from an early study (Berry & Boland, 1973) suggests that approximately 6.1% of structural fire destruction and 11.2% of fire protection costs can be associated with alcohol use. Because the total cost of structural damage and fire protection in Maine is not available, these values were determined by adjusting national data for inflation and Maine's population. The source of structural fire damage cost was from the National Fire Protection Association (2007) and the costs of fire protection were originally from the U. S. Census Bureau (1994) and cited in NIDA/NIAAA (1998). The National Fire Protection Association estimated a cost of $34.00 per capita for the Northeast region for structural fire damage (NFPA, 2007, pg. 17). Northeast was defined to include Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

The total estimated cost of fire destruction related to alcohol abuse is $9.2 million.

Table 7.2
Estimated Alcohol-Related Cost of Fire Protection and Property Damage and Destruction Due to Fire
Maine 2005

Type of Cost/Loss	Total Costs/Losses	Alcohol Attributable Fraction [3]	Total Alcohol-Related Losses ($)
Fire Protection Costs [1]	$60,182,255	0.112	$6,740,413
Property Damage/Destruction [2]			
Residential Structure	$30,565,082	0.061	$1,864,470
Other Structure	$10,305,434	0.061	$628,631
Total			**$9,233,514**

Notes and Sources:

[1] U. S. Bureau of the Census, 1994; adjusted for Maine population and inflation

[2] National Fire Protection Association, 2006; Fire Loss in the United States During 2005

[3] Berry and Boland, 1973

Motor Vehicle Crashes (Non-Medical)

Use or abuse of drugs and alcohol is a significant risk factor for motor vehicle accidents. Costs resulting from alcohol- or drug-related accidents result in premature death, medical care, vehicle damage, and legal and court costs. The costs related to premature death were presented in Chapter 4 and those related to medical care were reported in Chapter 6. This section reports on other motor vehicle accident costs, including legal and court costs, insurance administration, and vehicle damage. The source of the cost data is NIDA/NIAAA (1998, Table 6-17). Data on the percent of alcohol-related fatalities in Maine was provided by the U.S. Department of Transportation (U.S. Department of Transportation, Table 4).

While drug abuse is known to contribute to some accidents, there is no published, reliable research on the frequency of drug-related accidents that do not involve alcohol. Because of this lack of data, a national cost study (NIDA/NIAAA, 1998) limited the cost estimates to alcohol-related crashes only. The same approach is followed here.

National data on the costs of motor vehicle crashes presented in NIDA/NIAAA (1998) was adjusted for inflation and Maine's population. Table 7.3 shows the estimates by type of cost for Maine and the percentage attributable to alcohol abuse.

Table 7.3
Estimated Non-Medical Cost of Alcohol-Related Motor Vehicle Crashes, Maine, 2005

Type of Cost [1]	Type/Severity of Crash				Total
	Fatal	Severe/ Critical Injury	Minimum/ Moderate Injury	Property Damage Only	
Legal/Court Costs	$20,811,782	$20,590,772	$16,993,219	--	$58,395,773
Insurance Administration	$14,181,480	$23,298,145	$19,227,876	$20,891,591	$77,599,093
Vehicle/Roadway Damage	$2,363,580	$7,630,987	$98,607,328	$192,413,826	$301,015,721
Total	**$37,356,842**	**$51,519,904**	**$134,828,424**	**$213,305,418**	**$437,010,587**
Percent Attributed to Alcohol Abuse [2]	23%	18.2%	9.8%	8.0%	11.1%
Costs Attributable to Alcohol Abuse	**$8,592,074**	**$9,396,458**	**$13,271,162**	**$17,167,033**	**$48,426,726**

Notes and Sources:

[1] NIDA/NIAAA, 1998, Table 6.17; US per capita costs were adjusted for inflation using the CPI (38.1% increase between 1992 and 2005).

[2] U.S. Department of Transportation, Traffic Safety Facts 2005, Table 115; the percentage of fatal crashes involving a driver with a BAC $\geq$0.10 g/dl is actual Maine data; other percentages are calculated from NIDA/NIAAA figures (see Appendix D).

In Maine in 2005, there were 169 total motor vehicle fatalities. Fifty (29.6% of total) occurred in instances in which a driver had a blood alcohol level of 0.08 g/dl or greater. The total non-medical costs of alcohol-related automobile accidents were estimated at $48.4 million. The most costly accident category was property damage, which accounted for 35.4% of the total costs, followed by minimum/moderate injury accidents.

Summary

This chapter presented estimates for selected costs not included in previous chapters. Of the three cost categories examined, social welfare administration, fire destruction, and non-medical motor vehicle accident costs, motor vehicle accident costs were the greatest ($48.4 million), accounting for 43.2% of the total cost ($112.2 million). There were 50 fatalities from crashes involving alcohol in Maine in 2005. This analysis highlights the significant economic loss associated with alcohol use and abuse resulting from motor vehicle accidents.

Chapter 8

Summary

The purpose of this report has been to assess in economic terms the cost to society of substance abuse among Maine residents in 2005. It attempts to quantify these costs broken down by the major categories in which actual costs are expended or opportunities for economic productivity are lost: Substance Abuse Treatment, Morbidity, Mortality, Crime, Medical Care, and Other Related Costs. Although this type of analysis cannot measure the emotional toll exacted by alcohol and drug abuse, and devalues certain segments of the population (e.g., youth, homemakers and the elderly), it nonetheless provides a valuable comparison between the resources invested in the prevention and treatment of substance abuse, and the costs resulting from these disorders. This report also provides a bench mark for tracking changes in these costs over time.

Major Findings

- In 2005, the total estimated cost of substance abuse in Maine was $898.4 million.
- This $898.4 million translates into a cost equaling $682 for every resident of Maine.
- Substance abuse treatment ($25.2 million) comprised the smallest proportion of total cost (2.80%), while crime, $214.4 million, comprised the largest proportion of costs (23.9%).

Overview

The total economic cost of drug and alcohol abuse in Maine in 2005 was estimated at $898.4 million (see Table 8 for a breakdown by category). Figure 8.1 shows these costs for the six areas analyzed in the previous chapters, as compared to costs estimated for the year 2000. As shown, the largest single cost category in 2005 was crime, accounting for an estimated $214.4 million, followed by mortality, with estimated costs totaling $204.2 million. Significant costs due to medical care ($186.8 million), morbidity ($155.6 million), and other related costs ($112.2 million) were also incurred. The cost of $898.4 million translates to a per capita cost of $682 for every Maine resident.

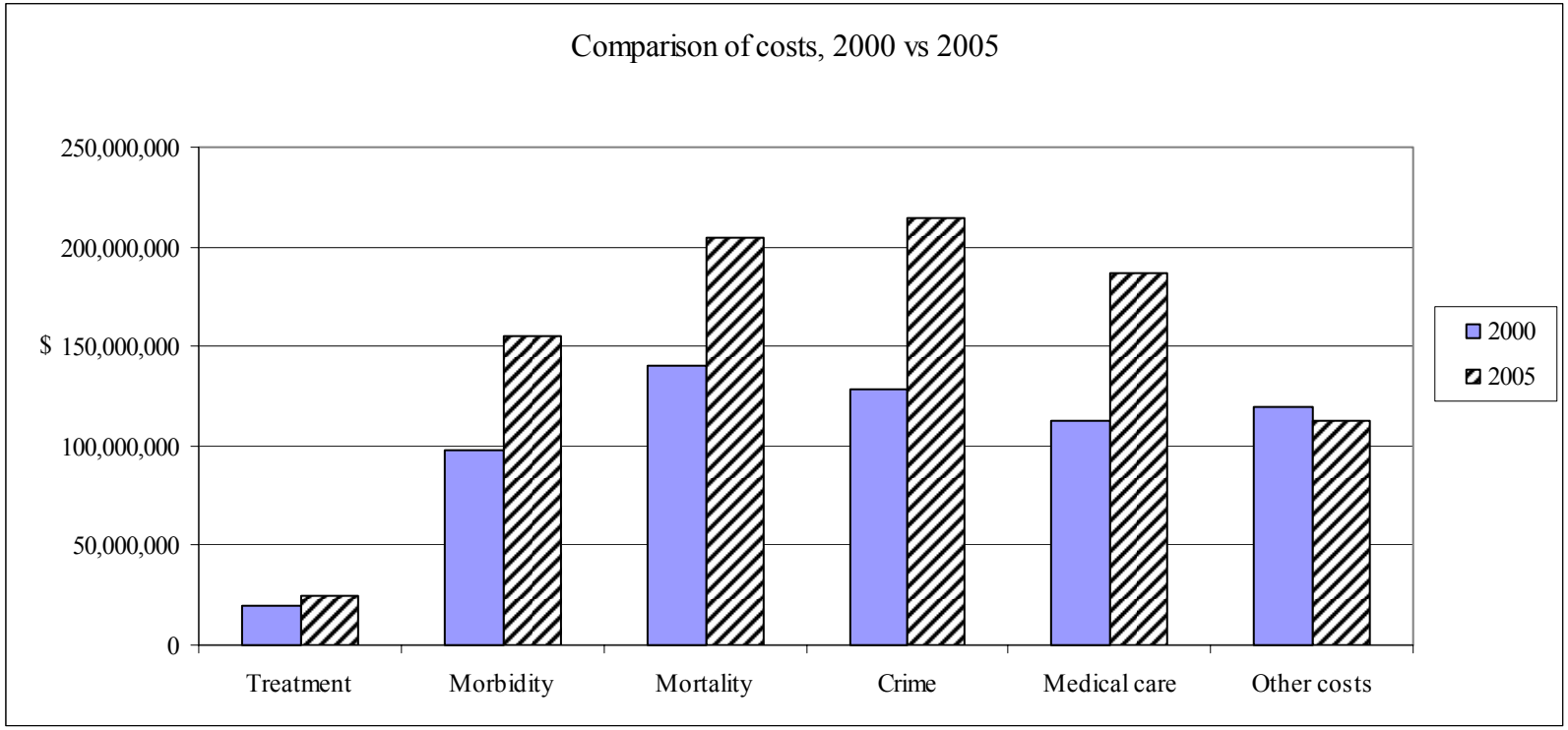
Table 8

Summary: Estimated Cost of Alcohol and Drug Abuse by Category

Maine, 2005

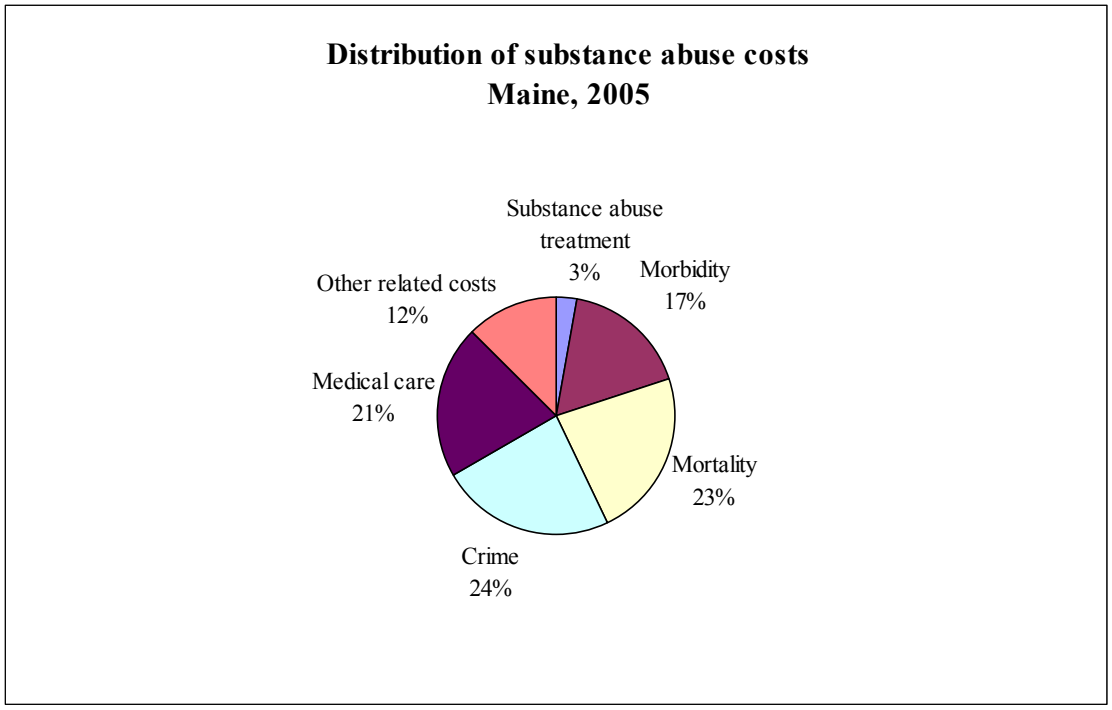
	Cost	%
TREATMENT	**$25,177,162**	**2.8%**
MORBIDITY	**$155,615,925**	**17.3%**
MORTALITY	**$204,182,361**	**22.7%**
CRIME	**$214,419,002**	**23.9%**
Law Enforcement	$101,089,931	
Police Protection	$36,838,936	
Drug Control	$64,250,995	
Supply/Demand Reduction (Federal)	$56,354,049	
Prevention (State)	$7,896,946	
Judicial	$16,599,999	
Corrections	$44,013,695	
State	$28,039,722	
County	$15,973,973	
Other	$52,715,377	
Productivity Loss Due to Incarceration	$42,759,182	
Property Destruction Due to Crime	$7,465,155	
Productivity Loss for Victims	$2,491,040	
MEDICAL CARE	**$186,838,695**	**20.8%**
Hospital Care	$162,448,587	
Inpatient	$111,184,589	
Outpatient	$51,263,998	
Other Costs	$24,390,108	
Prescription Drugs	$18,170,108	
Nursing Home	$6,220,000	
OTHER	**$112,168,008**	**12.5%**
Social Welfare	$54,507,768	
Child Welfare	$52,250,000	
Other Welfare (Administration Only)	$2,257,768	
Fire Protection and Destruction Due to Fire	$9,233,514	
Motor Vehicle Crashes (Non-Medical Costs)	$48,426,726	
TOTAL	**$898,401,153**	**100.0%**

Figure 8.1


Comparison of costs, 2000 vs 2005
250,000,000
200,000,000
$ 150,000,000
100,000,000
50,000,000
0
Treatment
Morbidity
Mortality
Crime
Medical care
Other costs
2000
2005

The proportion of the total cost attributed to different categories has not changed dramatically since 2000. Shown as percentages of the total cost in 2005 (Figure 8.2), crime and mortality accounted for the largest portions of the total cost.

Figure 8.2



Conclusions

The total estimated cost of substance abuse in Maine in 2005 was $898.4 million, compared to $618.0 million in 2000. The category comprising the smallest proportion of the total cost (2.8%) was substance abuse treatment at $25.2 million. At $214.4 million, the category showing the highest estimated cost was crime (23.9% of total).

Although the goal of this report was to document the economic costs associated with drug and alcohol abuse, readers should keep in mind that substance abuse also has serious consequences that affect individuals and their families in ways that cannot be quantified through economic analysis. In 2005, it was estimated that 681 persons in Maine died of causes related to drug or alcohol abuse, resulting in a potential loss of 15,747 years of life, and substantially more people suffered from substance-related illnesses, injuries, and domestic violence. Clearly, the consumption of alcohol and other drugs creates costs that are not adequately born by the producer or the consumer of the products, but rather by society as a whole, including other businesses as lost productivity.

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Appendix A
Calculation of Estimated Morbidity Costs

	A	B	C	D	E	F	G	H	I	J	K	L [1]	M [2]	N [3]	O [4]
	Employed			Not in labor force			Median earnings	Housekeeping		Impairment rates			Morbidity costs		
	Alcohol disorder	Drug disorder	Alcohol and/or drug disorder	Alcohol disorder	Drug disorder	Alcohol and/or drug disorder		In labor force	Not in labor force	Alcohol	Drugs	Alcohol and/or drug disorder	Alcohol	Drugs	Alcohol and/or drug disorder
	N	N	N	N	N	N	$	$	$				$	$	$
Male															
18-24	8,858	5,919	11,716	4,213	2,815	5,572	23,400	3,502	7,257	1.4	1.1	1.61	$3,764,263	$1,976,282	$5,725,504
25-44	16,360	5,362	20,674	2,560	2,550	3,235	36,400	4,405	8,227	4.25	5.45	5.17	$29,266,986	$13,067,685	$44,990,404
45-64	12,070	*	12,070	3,993	*	3,993	41,600	4,770	8,602	7.4	7.8	7.4	$43,957,761		$43,957,761
65+	*	*	*	*	*	*	14,534	3,558	6,762	9.3	7.3	7.3			
													$76,989,010	$15,043,967	$94,673,669
Female															
18-24	4,321	3,157	6,168	2,724	1,502	3,888	17,807	11,076	18,337	0.8	0.2	0.65	$1,398,061	$237,460	$1,621,414
25-44	8,800	2,899	10,290	2,782	1,378	3,253	24,000	13,128	20,347	7.35	1.45	6.74	$28,174,888	$1,967,131	$30,211,068
45-64	3,748	*	4,283	1,581	*	1,807	31,200	11,588	18,891	15.3	4.55	13.39	$29,105,705		$29,109,774
65+	*	*	*	*	*	*	14,560	5,501	9,017	18.7	7.3	7.3			
													$58,678,654	$2,204,591	$60,942,256
EST													$135,667,664	$17,248,559	$155,615,925

Sources: US Census Bureau, 2007; Baird, Lanctot and Clough, 2004; Rice et al., 1990

Notes:

[1] L= [(A/C)*J] + [(B/C)*K]

[2] M=[(A*(G+H) + (D*I)]*J

[3] N=[(B*(G+H) + (E*I)]*K

[2] O=[(C*(G+H) + (F*I)]*L

APPENDIX B.1

ICD-9 Codes and Alcohol Attributable Fractions for Alcohol-Related Injuries and Associated Hospital Inpatient Charges, Maine, 2005

		Total Discharges [1]		Total Charges [1]		AAF	Alcohol-Related Discharges		Alcohol-Related Charges		
		Males	Females	Males	Females	[2]	Males	Females	Males	Females	Total
800-968	Injuries/poisonings (excl. 965.0, 967, 968.0)	3032	3552	$84,168,524	$74,227,980	0.10	303	355	$8,416,852	$7,422,798	$15,839,650
980-995	Injuries/poisonings (excl. 980.0)	119	94	$1,253,676	$1,813,477	0.10	12	9	$125,368	$181,348	$306,715
E810-E825	Motor vehicle traffic/nontraffic accidents [3]	43	55	$1,023,339	$694,784	0.23	10	13	$235,368	$159,800	$395,168
E826-E829	Pedal cycle/other road vehicle accidents	4	0	$73,870	$0	0.20	1	0	$14,774	$0	$14,774
E830-E838	Water transport accidents	3	0	$33,252	$0	0.20	1	0	$6,650	$0	$6,650
E840-E945	Air/space transport accidents	0	0	$0	$0	0.16	0	0	$0	$0	$0
E880-E888	Accidental falls	424	666	$7,970,190	$10,064,884	0.35	148	233	$2,789,567	$3,522,709	$6,312,276
E890-E899	Accidents caused by fire/flames	7	8	$84,212	$143,653	0.45	3	4	$37,895	$64,644	$102,539
E910	Accidental drowning/submersions	1	0	$71,285	$0	0.38	0	0	$27,088	$0	$27,088
E950-E959	Suicide/self inflicted injury	218	343	$3,928,850	$3,961,282	0.28	61	96	$1,100,078	$1,109,159	$2,209,237
E960-E969	Homicide	24	10	$449,864	$109,833	0.46	11	5	$206,937	$50,523	$257,461
E901,E911 E917,E918 E919,E920 E922,E980	Other injuries/adverse effects	104	77	$1,757,454	$987,770	0.25	26	19	$439,364	$246,943	$686,306
Total		**3,979**	**4,805**	**$100,814,516**	**$92,003,663**		**576**	**734**	**$13,399,942**	**$12,757,924**	**$26,157,865**

Notes and Source:

[1] Maine Health Data Organization, 2007

[2] NIDA/NIAAA, 1998

[3] AAF is the proportion of fatal crashes in Maine involving a driver with a BAC ≥0.10 g/dl (U.S. Department of Transportation, 2005).

APPENDIX B.2

ICD-9 Codes and Alcohol Attributable Fractions for Alcohol-Related Injuries And Associated Hospital Outpatient Charges, Maine, 2005

		Total Outpatient Visits [1]		Total Charges [1]		AAF	Alcohol-Related Visits		Alcohol-Related Charges		
		Males	Females	Males	Females	[2]	Males	Females	Males	Females	Total
800-968	Injuries/poisonings (excl. 965.0, 967, 968.0)	105,622	97,221	$78,041,608	$63,915,965	0.10	10,562	9,722	$7,804,161	$6,391,596	$14,195,757
980-995	Injuries/poisonings (excl. 980.0)	3,949	4,572	$1,770,086	$1,778,704	0.10	395	457	$177,009	$177,870	$354,879
E810-E825	Motor vehicle traffic/nontraffic accidents [3]	746	1,102	$796,804	$885,015	0.22	172	253	$183,265	$203,553	$386,818
E826-E829	Pedal cycle/other road vehicle accidents	62	48	$38,620	$28,563	0.20	12	10	$7,724	$5,713	$13,437
E830-E838	Water transport accidents	14	6	$12,643	$2,677	0.20	3	1	$2,529	$535	$3,064
E840-E845	Air/space transport accidents	1	2	$1,097	$3,878	0.16	0	0	$176	$620	$796
E880-E888	Accidental falls	2,222	3,308	$2,220,061	$2,889,997	0.35	778	1,158	$777,021	$1,011,499	$1,788,520
E890-E899	Accidents caused by fire/flames	49	30	$35,175	$17,796	0.45	22	14	$15,829	$8,008	$23,837
E910	Accidental drowning/submersions	4	2	$2,261	$5,154	0.38	2	1	$859	$1,959	$2,818
E950-E959	Suicide/self inflicted injury	275	454	$337,518	$524,937	0.28	77	127	$94,505	$146,982	$241,487
E960-E969	Homicide	154	306	$138,632	$223,388	0.46	71	141	$63,771	$102,758	$166,529
E901,E911 E917,E918 E919,E920 E922,E980	Other injuries/adverse effects	1,070	852	$704,230	$559,460	0.25	268	213	$176,058	$139,865	$315,923
Total		**114,168**	**107,903**	**$84,098,735**	**$70,835,534**		**12,361**	**12,097**	**$9,302,905**	**$8,190,960**	**$17,493,865**

Source:

[1] Maine Health Data Organization, 2007

[2] NIDA/NIAAA, 1998

[3] AFF is the proportion of fatal crashes in Maine involving a driver with a BAC $\geq$0.10 g/dl (U.S. Department of Transportation, 2005).

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